

JVC

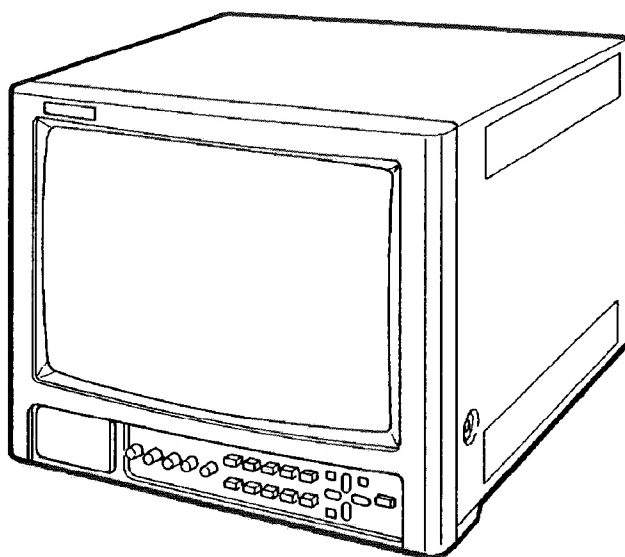
SERVICE MANUAL

COLOUR VIDEO MONITOR

BM-1400PN-A_(A)

BASIC CHASSIS

BM



Since some details were changed so as to deal with SDI, we have issued the SERVICE MANUAL for BM-1400PN-A(A).

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SPECIFICATIONS

Item	Content
Color system Picture tube Screen size Scanning frequency Horizontal resolution Color temperature	PAL / NTSC 3.58 / NTSC4.43 36cm measured diagonally, 90° deflection, in-line gun, medium - high - definition tinted cathode - ray tube, trio - dot type (dot pitch of 0.39mm) P-22 phosphor 280×210 (W×H) H : 15.734kHz (NTSC 3.58 / 4.43), 15.625kHz (PAL) V : 59.94Hz (NTSC 3.58 / 4.43), 50Hz (PAL) 620TV lines or more 6500K; x = 0.313, y = 0.329 9300K; x = 0.283, y = 0.297 (selectable)
Video inputs Composite video signal Y/C (1line) Analog RGB Y, R-Y, B-Y COMPONENT External sync inputs	INPUT A,B(2lines) : BNC×2each (with 1 bridge-connected output) Termination switches provided 1.0Vp-p, 75Ω, negative sync Mini-DIN (4pin)×2 (with 1 bridge-connected output) termination switches provided Y : 1.0Vp-p, 75Ω, negative sync C : 0.286Vp-p, 75Ω (NTSC), 0.3Vp-p 75Ω (PAL) RGB / COMPONENT(SDI) (1line : common with Y, R-Y, B-Y), BNC×6 (with 3 bridge-connection outputs) termination switches provided R, B : 0.7Vp-p, 75Ω G : 0.7Vp-p, 75Ω Gonsync : 1.0Vp-p, 75Ω, negative sync RGB / COMPONENT(SDI) (1line : common with analog RGB) Y : 1.0Vp-p, 75Ω, negative sync R-Y, B-Y : 0.7Vp-p, 75Ω
Audio inputs	AUDIO A, B RGB / COMPONENT (3lines) : RCA×2each (with 1 bridge-connection output) 500mVrms, high impedance.
Audio power output Speaker Tally / Remote control	0.8W 9×5cm oval×1 DIN (8pin)×1
Power requirements Power consumption Operation temperature	230V AC, 50/60 Hz 0.7A maximum 0° ~ 40°C (20 ~ 80% RH)
Dimension Mass	346×332×410mm (W×H×D) 16.2kg
SDI unit interface	The power supply of the monitor can be linked with that of the SDI unit. By employing the SDI unit, a SERIAL DIGITAL signal can be converted into an analog component signal. Because the SDI unit can be mounted at the back side of the monitor, the existing rack with ordinary height can be used as it is.

Design & specification subject to change without notice.

SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
4. **Don't short between the LIVE side ground and ISOLATED(NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (↗) side GND and EARTH : (⊕) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
If above note will not be kept, a fuse or any parts will be broken.
5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B₁ POWER SUPPLY).
6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10k Ω 2W resistor to the anode button.
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

9. Isolation Check

(Safety for Electrical Shock Hazard)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) Dielectric Strength Test

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.

(. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)

This method of test requires a test equipment not generally found in the service trade.

(2) Leakage Current Check

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

• Alternate Check Method

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500 Ω 10W resistor paralleled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).

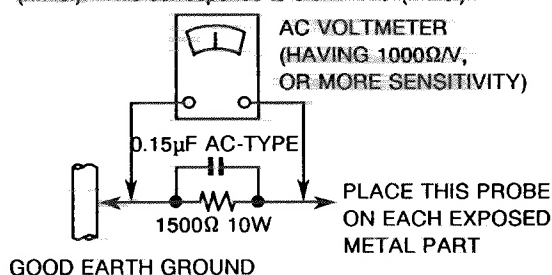


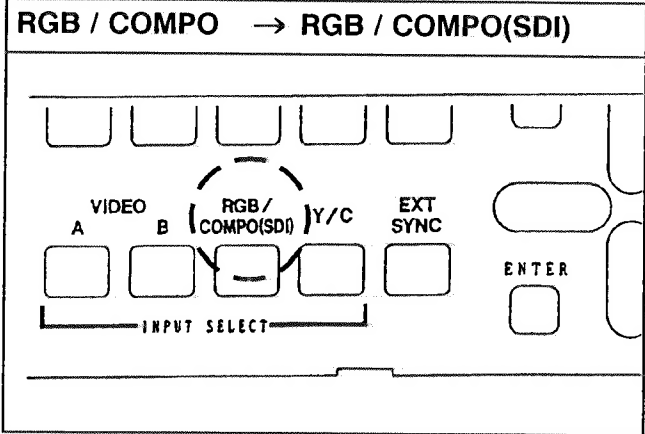
Fig.A

HOW TO IDENTIFY THE MODEL

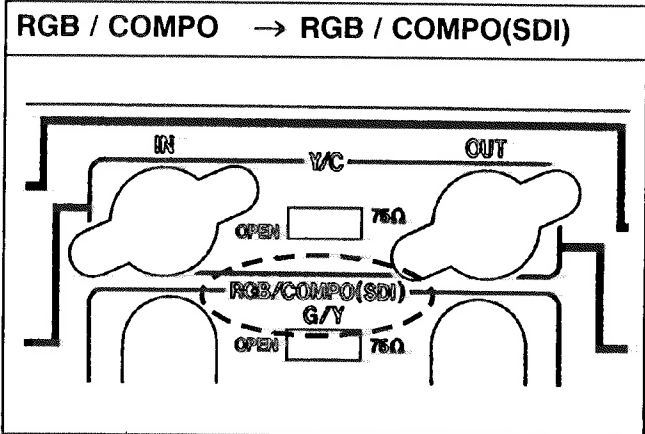
BM-1400PN-A_(A)

Model number is indicated following items.
Please use this SERVICE MANUAL for the unit with the model No. of BM-1400PN-A_(A).

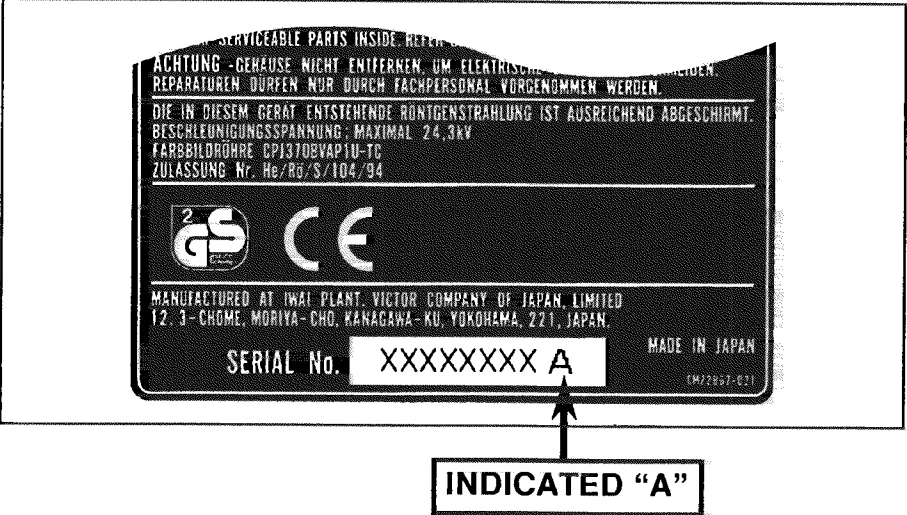
■ THE CHANGING OF THE INDICATION THAT FRONT CONTROL PART



■ THE CHANGING OF THE INDICATION THAT REAR TERMINAL PART



■ THE CHANGING OF THE INDICATION IN THE RATING LABEL



■ MAIN DIFFERENCE LIST BETWEEN BM-1400PN-A AND BM-1400PN-A_(A)

MODEL	BM-1400PN-A	BM-1400PN-A _(A)	Description
PARTS NAME			
MICOM PWB	FX-5017A	FX-5018A	Not Interchangeable
INPUT PWB	FX-6046A	FX-6052A	Not Interchangeable
CONTROL SHEET	CM35943-001	CM35943-002	Not Interchangeable
TERMINAL SHEET	CM35944-A01	CM35944-A02	Not Interchangeable
SDI LABEL	—	CP40344-001	Not Interchangeable



BM-H2000PN/BM-H1400PN/BM-1400PN-A COLOUR VIDEO MONITOR

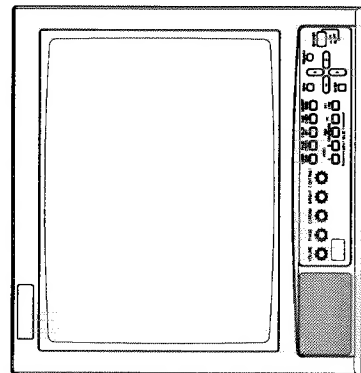
COLOUR VIDEO MONITOR

BEDIENUNGSANLEITUNG : FARB-VIDEO-MONITOR
MANUEL D'INSTRUCTIONS : MONITEUR VIDEO COULEUR
MANUALE DI ISTRUZIONI : MONITOR VIDEO A COLORI
INSTRUCCIONES : MONITOR DE VIDEO A COLOR

BM-H2000PN
BM-H1400PN
BM-1400PN-A

INSTRUCTIONS

BM-H2000PN (A) / BM-H1400PN (A)
BM-1400PN-A (A)



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CQ40026-004
1096-TU-V-VP



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SAFETY PRECAUTIONS

In order to prevent any fatal accidents caused by misoperation or mishandling of the monitor, be fully aware of all the following precautions.

Machine Noise Information Ordinance 3. GSGV, January 18, 1991. The sound pressure level at the operator position is equal or less than 70 dB(A) according to ISO 7779.

WARNINGS

To prevent fire or shock hazard, do not expose this monitor to rain or moisture.
Dangerous high voltages are present inside the unit. Do not remove the back cover of the cabinet.
When servicing the monitor, contact qualified service personnel. Never try to service it yourself.

Improper operations, in particular alteration of high voltage or changing the type of tube may result in x-ray emission of considerable dose. A unit altered in such a way no longer meets the standards of certification, and must therefore no longer be operated.

PRECAUTIONS

- Use only the power source specified on the unit.
- When not using this unit for a long period of time, or when cleaning it, be sure to disconnect the power plug from the AC outlet.
- Do not allow anything to rest on the power cord. And do not place this unit where people will tread on the cord.
- Do not overload wall outlets or power cords as this can result in a fire or electric shock.
- Avoid using this unit under the following conditions:
 - in extremely hot, cold or humid places,
 - in dusty places,
 - near appliances generating strong magnetic fields,
 - in places subject to direct sunlight,
 - in badly ventilated places,
 - in automobiles with doors closed.
- Do not cover the ventilation slots while in operation as this could obstruct the required ventilation flow.
- When dust accumulates on the screen surface, clean it with a soft cloth.
- Unplug this unit from the AC outlet and refer servicing to qualified service personnel under the following conditions:
 - when the power cord is frayed or the plug is damaged,
 - if liquid has been spilled into the unit,
 - if the unit has been dropped or the cabinet has been damaged,
 - when the unit exhibits a distinct change in performance.
- Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Always refer servicing to qualified service personnel.
- When replacement parts are required, have the service personnel verify in writing that the replacement parts he/she uses have the same safety characteristics as the original parts. Use of manufacturer's specified replacement parts can prevent fire, shock, or other hazards.
- Upon completion of any servicing or repair work to this unit, please ask the service personnel to perform the safety check described in the manufacturer's service literature.
- When this unit reaches the end of its useful life, improper disposal could result in a picture tube implosion. Ask qualified service personnel to dispose of this unit.

SCREEN BURN

- It is not recommended to keep a certain still image displayed on screen for a long time as well as displaying extremely bright images on screen. This may cause a burning (sticking) phenomenon on the screen of cathode-ray tube. This problem does not occur as far as displaying normal video playback motion images.

This manual is divided into five language sections:

English	Pages 2 to 23
German	Pages 24 to 45
French	Pages 46 to 67
Italian	Pages 68 to 89
Spanish	Pages 90 to 111

Thank you for purchasing this JVC colour video monitor. Before using it, read and follow all instructions carefully to take fullest advantage of the monitor's performance.

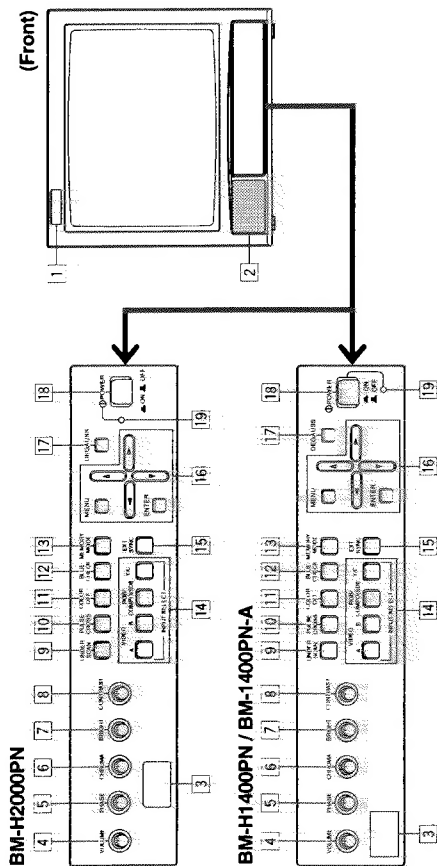
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FEATURES

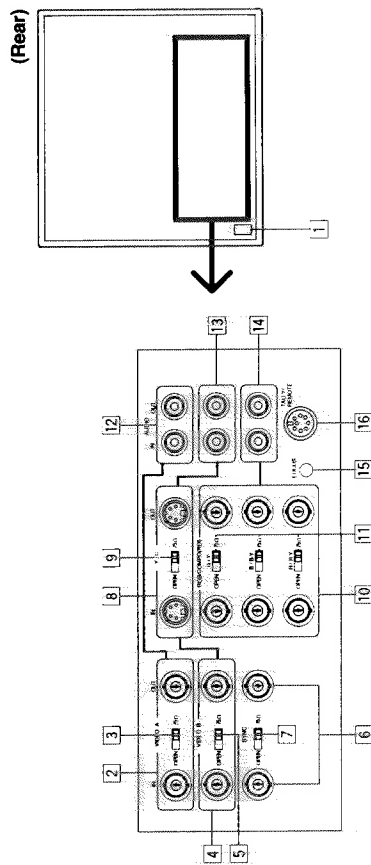
- For multiple applications with various video systems; equipped with external source component terminals that can be bridge-connected.
- Compatible with NTSC-3.58/4.43 MHz or PAL colour systems.
- The BM-H2000PN has a medium-high-definition picture tube that reproduces pictures with a horizontal resolution of 750 TV lines or more.
- The BM-H1400PN has a high-definition picture tube that reproduces pictures with a horizontal resolution of 750 TV lines or more.
- The BM-1400PN-A has a medium-high-definition picture tube that reproduces pictures with a horizontal resolution of 620 TV lines or more.
- Auto white-balance stabiliser (V/K feedback circuit) maintains stable colour reproduction over long-term use.
- A range of flexible functions includes picture aspect ratio switching (between 4:3 and 16:9), memory mode and control lock.
- Optional exclusive wireless remote control unit enables individual operation and adjustment of up to 99-unit monitors.

CONTROLS AND FEATURES (FRONT)



- 1 Tally lamp**
Glow to indicate when a tally signal is input to the TALLY/REMOTE terminal on the rear panel. (For terminal connection, see page 15.)
- 2 Speaker**
Senses infrared signals emitted from the optional wireless remote control.
- 3 Remote control sensor**
Senses infrared signals emitted from the optional wireless remote control.
- 4 VOLUME control**
Turn to adjust speaker volume.
- 5 PHASE control**
Turn to adjust picture hue, using natural skin colour as a reference.
- 6 CHROMA control**
Turn to adjust picture colour density according to your requirements.
- 7 BRIGHT control**
Turn to adjust picture brightness according to your requirements.
- 8 CONTRAST control**
Turn to adjust the picture contrast according to your requirements.
- 9 UNDER SCAN switch**
Push to display the whole picture on screen by reducing display area dimensions.
- 10 PULSE CROSS switch**
Push to check the retrace period (sync signal) by delaying input signal phase.
- 11 COLOR OFF switch**
Push to eliminate colour signals and display a black-and-white picture.
- 12 BLUE CHECK switch**
Push to eliminate red and green colour signals and display a monochrome blue picture.
- 13 MEMORY MODE switch**
Push to adjust the picture by recalling the adjustment data that you stored in memory.
- 14 INPUT SELECT switches**
Push to select a rear terminal video signal input.
- 15 EXT SYNC switch**
Push to synchronise the monitor with an external sync signal. This function is effective regardless of signal input.
- 16 MENU controls**
Use to operate on-screen menu functions.
- 17 DEGAUSS switch**
Push to demagnetise the picture tube.
- 18 POWER switch**
Press to turn the power on or off.
- 19 POWER indicator**
Glow to indicate that power is on.

TERMINALS AND FEATURES (REAR)

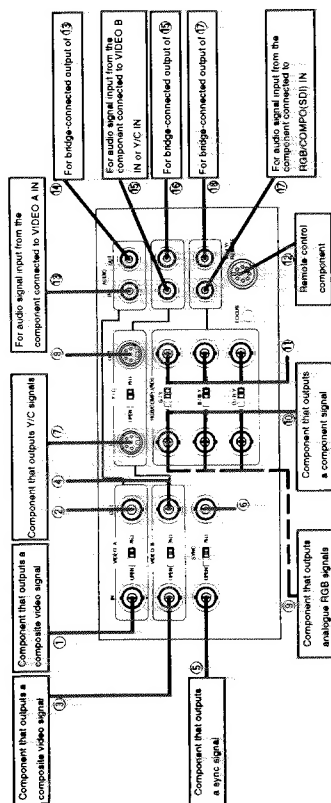


- 1 Power socket**
Connect to an AC outlet (230 V AC, 50/60 Hz) using the provided power cord.
- 2 VIDEO A terminals**
Composite video signal input terminal and bridge-connected output terminal.
- 3 VIDEO A termination switch**
Set to OPEN for bridge connection; set to 75Ω for input signal only.
- 4 VIDEO B terminals**
Composite video signal input terminal and bridge-connected output terminal.
- 5 VIDEO B termination switch**
Functions as for 3.
- 6 SYNC terminals**
External sync signal input terminal and bridge-connected output terminal. Input an external composite sync signal to these terminals when inputting a video signal without a sync signal, or when synchronising the monitor with an external sync signal.
- 7 SYNC termination switch**
Functions as for 3.
- 8 Y/C terminals**
Input terminal of Y/C signals and bridge-connected output terminal.
- 9 Y/C termination switch**
Functions as for 3.
- 10 RGB/COMPO(SDI) terminals**
Input terminal of analogue RGB signals or Y/B-Y/R-Y signals and bridge-connected output terminal. For analogue RGB signals, also accepts a G signal including a sync signal.
- 11 RGB/COMPO(SDI) termination switch**
Functions as for 3.
- 12 AUDIO A terminals**
Audio signal input terminal and bridge-connected output terminal. Linked with the VIDEO A terminals so that AUDIO A terminals and VIDEO A terminals are selected simultaneously.
- 13 AUDIO B terminals**
Audio signal input terminal and bridge-connected output terminal. Linked with the VIDEO B or Y/C terminals so that AUDIO B terminals and VIDEO B or Y/C terminals are selected simultaneously.
- 14 AUDIO RGB/COMPO(SDI) terminals**
Audio signal input terminal and bridge-connected output terminal. Linked with the RGB/COMPO(SDI) terminals so that AUDIO RGB/COMPO(SDI) terminals and RGB/COMPO(SDI) terminals are selected simultaneously.
- 15 FOCUS control**
Adjustment hole exclusively for use by service personnel. Make sure to consult qualified service personnel for adjustment.
- 16 TALLY/REMOTE terminal**
External input terminal of a tally signal to make the tally lamp glow, or of a remote-control signal to switch input or picture control.

CONNECTION EXAMPLE



- Be sure to turn off each component's power before connection.
- The connection shown below is only an example. Terminals and their functions differ in accordance with a component to be connected. Also read and follow the instructions for the component.



Signal	Terminal	Function
1	Composite video	Input of a composite video signal
2	VIDEO A IN	Bridge-connected output of 1
3	VIDEO B IN	Input of a composite video signal
4	VIDEO B OUT	Bridge-connected output of 3
5	Composite video	Input of an external sync signal
6	Composite sync	Bridge-connected output of 5
7	Y/C	Input of Y/C signals
8	Y/C OUT	Bridge-connected output of 7
9	RGB/COMPQ(SDI) IN	Input of analogue RGB signals
10	RGB/COMPQ(SDI) IN	Input of a component signal
11	RGB/COMPQ(SDI) OUT	Bridge-connected output of 9 or 10
12	TALLY/REMOTE	Input of a tally signal or remote control signal

External/internal synchronisation

Push the front panel EXT SYNC switch to ON, and the monitor operates to synchronise with an external sync signal input to the rear panel SYNC IN terminal.

Push the switch again to OFF, and the monitor operates to synchronise with a sync signal included in a video signal (if it includes a sync signal) input via a video input terminal.

RGB/COMPQ(SDI) terminal setting

Set RGB or COMPO. on screen to match the type of video signal input to the rear panel RGB/COMPQ(SDI) IN terminals.

To input analogue RGB signals, set to RGB.

To input Y, B-Y or R-Y signal, set to COMPO.

Operation:

- Press the front panel MENU button to call up the MENU display on screen.
- Press the \blacktriangle or \blacktriangledown button to select RGB/COMPQ(SDI).
- Press the \blacktriangleleft or \blacktriangleright button to set RGB or COMPO.
- Press the MENU button to complete.

(MENU)	ASPECT	RATIO	4:3
	FILTER SELECT	COMB	
	PEAKING FREQ.	2.5MHz	
	PEAKING LEVEL	0dB	
	AFC	NORMAL	
	COLOR TEMP.	6500	
	NTSC SETUP	0	
	COMPO. LEVEL	SMPT	
	(MEMORY MODE)		
	RGB/COMPQ(SDI)	RGB	
		RGB	

BASIC OPERATION

1. To turn the power on:

Push the **POWER switch**.

The POWER indicator glows green. The mode and colour system of an input signal are automatically discerned and displayed on screen for about 3 seconds. To turn off power, push the POWER switch again, and the POWER indicator goes off.

2. To select the input:

Push an **INPUT SELECT switch**.

Push VIDEO A, VIDEO B, RGB/COMPQ(SDI) or Y/C. The mode and colour system of a selected input signal are automatically discerned and displayed on screen for about 3 seconds.

3. To adjust the audio level:

Turn the VOLUME control to the right to increase the level, or to the left to decrease the level.

Relation between input mode indication and signal input/terminal

Input mode indication	Signal input/terminal
VIDEO A	Composite video signal input to VIDEO A IN
VIDEO B	Composite video signal input to VIDEO B IN
Y/C	Y/C signal input to Y/C IN
RGB	Analogue RGB signal input to RGB/COMPQ(SDI) IN
COMPQ(SDI)	Component signal input to RGB/COMPQ(SDI) IN

Colour system indication

Indication	Colour system	Colour sub-carrier frequency	Vertical scanning frequency
NTSC	NTSC	3.58 MHz	60 Hz
PAL	PAL	4.43 MHz	50 Hz
N4.43	NTSC	4.43 MHz	60 Hz
B/W	(Indicates when a black-and-white signal is input)		
NO SYNC	(Indicates when no signal is input)		



To demagnetise the picture tube

After positioning near the monitor a speaker (non-magnetic shielded) or other equipment that generates a strong magnetic field, or after relocating the monitor, colour patches could appear in the picture due to magnetisation of the picture tube. If this occurs, push the DEGAUSS switch to demagnetise the picture tube.

- This function is not effective if activated a second time after a very short time has elapsed. When degaussing must be repeated, proceed after at least 10 minutes have passed since first degaussing.
- The optional wireless remote control features a DEGAUSS key.


PICTURE ADJUSTMENTS

Turn a separate front panel control to adjust picture contrast, picture brightness, picture colour density, and picture hue respectively:

CONTRAST (picture contrast) _____
Softer  Clearer

BRIGHT (picture brightness) _____
Darker  Brighter

CHROMA (picture colour density) _____
Thinner  Denser

PHASE (picture hue) _____
Purplish  Greenish

NOTE

● To adjust the CHROMA and PHASE controls more precisely, input the colour bar signal and operate the BLUE CHECK function as follows:

After inputting the colour bar signal, push the front panel BLUE CHECK switch to display a monochrome blue picture without red/green signal components. Turn the CHROMA and PHASE controls so that all (four, in the example below) blue bars have the same density and brightness.

Blue	Black	Blue	Black	Blue	Black	Blue

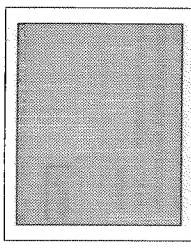
Relation between picture adjustments and input video signals _____
Each picture adjustment is effective for the following video signal input:

Signal Control	Composite video, Y/C				RGB		COMPONENT
	NTSC	PAL	NTSC 4-43	BTW			
PHASE	Yes	No	Yes	No	No	No	No
CHROMA	Yes	Yes	Yes	No	No	No	Yes
BRIGHT	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CONTRAST	Yes	Yes	Yes	Yes	Yes	Yes	Yes

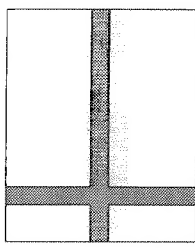
VIDEO SIGNAL CONTROLS

Push each switch to ON or OFF for video signal control.

UNDER SCAN _____
Push the UNDER SCAN switch to reduce the dimensions of display area so the whole picture is displayed on screen. Use to check the picture frame.



PULSE CROSS _____
Push the PULSE CROSS switch to simultaneously display two blank areas crossed horizontally and vertically on screen ("Pulse Cross" display) by delaying the phase of the input signal. Use to check the vertical retrace line period, equalizing pulse period, vertical sync period, horizontal sync pulse, or burst signal.



NOTE

● This function is not effective for analogue RGB signal input.

COLOR OFF _____
Push the COLOR OFF switch to display a black-and-white picture by inputting a luminance signal only. Use to check the noise contained in a luminance signal or white balance.

NOTE

● This function is not effective for analogue RGB signal input.

BLUE CHECK _____
Push the BLUE CHECK switch to display a monochrome blue picture by eliminating red and green signal components. Use to check or adjust the CHROMA and/or PHASE controls.

By calling up the menu display on screen, various functions can be selected and set as needed.



Calling up the menu display, selecting an item

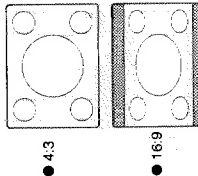
- Press the MENU button to call up the menu display on screen (see [1] below).
(Press again to make the display disappear.)
 - Press the ▲ or ▼ button to select an item to be set. "▶" is indicated for the selected item.
 - Press the ◀ or ▶ button to change the setting.
 - After selecting another item by pressing the ▲ or ▼ button, repeat step 3. These settings are all kept in memory after power is turned off.
 - Press the MENU button to complete. The menu display disappears.
- [1]
- When the menu display [1] (shown at left below) is on screen, press the ENTER button. The display changes to [2] (shown below centre). In this state, you can also select the item or change the setting.
 - When the display [2] is on screen, each time the ▼ button is pressed while the ENTER button is pressed, the indication moves up or down on screen (the display [3]). Press the MENU button with display [2] or [3] on screen, and the display is restored to [1].
 - If no operation occurs for about 5 minutes after calling up the menu display on screen, the display disappears automatically.

[1]		[2]		[3]	
<div> <div> (MENU) ASPECT RATIO : 4:3 FILTER SELECT : COMB PEAKING FREQ. : 2.6MHz PEAKING LEVEL : 0dB ▶ AFC : NORMAL COLOR TEMP. : 8500 NTSC SETUP : 0 COMPO. LEVEL : SMPTE (MEMORY MODE) : RGB RGB / COMPO(SD) : RGB </div> </div>		<div> <div>AFC</div> <div>NORMAL</div> </div>		<div> <div>AFC</div> <div>NORMAL</div> </div>	

ASPECT RATIO (picture aspect ratio switching)

The aspect ratio of the picture can be switched between 4:3 and 16:9. When switching to "16-9" on screen, the height of the picture is slightly reduced (see right).

Setting	Function
4:3	Standard picture aspect ratio (4:3)
16-9	Displays the picture in 16:9 aspect ratio



- The function can be operated and the indication appears only when a composite video signal of the NTSC system (excluding NTSC 4.43) is input to the monitor.

FILTER SELECT (built-in filter selection)

When a composite video signal of the NTSC system (excluding NTSC 4.43) is input to the monitor, either or both of two filters in the monitor can be activated.

Setting	Function
COMB (comb filter)	Reduces colour noise in NTSC video signals for clearer pictures.
BOTH (both filters)	Both comb and trap filters function at the same time.
NOTCH (Trap filter)	Eliminates dot interference that would show up in the vertical boundary between two different colours.



- When analogue RGB signals are input to the monitor, the indications do not appear and the functions cannot be operated.

PEAKING FREQ./PEAKING LEVEL (picture quality improvement)

Corrects the luminance signal to improve picture quality by changing peak frequency and/or peak level depending on the video signal input to the monitor. Use PEAKING FREQ. to set correction frequency. Use PEAKING LEVEL to set correction level.

Setting (frequency)	Function
2.6 MHz	For composite video signal or Y/C signal.
5.0 MHz	For component video signal.
Setting (level)	Function
0 dB to +9 dBs	Set a higher level for correction to a higher degree.



- By changing the default setting of white balance adjustment under the SET-UP MENU display (see page 15 for adjustment), the * indication is added to the right of the setting to indicate that the factory-preset setting was changed.

[MENU]	
ASPECT RATIO	: 4:3
FILTER SELECT	: COMB
PEAKING FREQ.	: 2.6MHz
PEAKING LEVEL	: 0dB
▶ AFC	: NORMAL
COLOR TEMP.	: 8500
NTSC SETUP	: 0
COMPO. LEVEL	: SMPTE
(MEMORY MODE)	: RGB
RGB / COMPO(SD)	: RGB



- The item and setting are indicated on screen and the function can be operated only when a video signal of the NTSC system is input to the monitor.



- The item and setting are indicated on screen and the function can be operated only when a component video signal is input to the monitor.

AFC (switching of time constant for the AFC)

Use to set the time constant for the AFC (auto fine-frequency control) to correct skew distortion of video signals input via a videotape recorder or other video equipment.

Setting	Function
NORMAL	Normal-speed correction.
FAST	Faster correction.
SLOW	Slower correction.

COLOR TEMP. (colour temperature switching)

Use to set the colour temperature of white balance.

Setting	Function
9300	To 9300K
6500	To 6500K

NTSC SETUP (NTSC set-up level)

Use to set up the luminance signal level to match the configuration of the video signal input to the monitor.

Setting	Function
0	For video signal with 0% luminance signal
7.5	For video signal with 7.5% luminance signal

COMPO. LEVEL (chrominance level setting)

Use to set the chrominance level of a component video signal.

Setting	Function
SMPTE	For component video signal input via an MJ videotape recorder.
BETA00	For component video signal input (set-up level: 0%) via a BETACAM videotape recorder.
BETA75	For component video signal input (set-up level: 7.5%) via a BETACAM videotape recorder.

MEMORY MODE

A set of picture settings can be programmed in memory for quick recall when necessary.

Recall/release of memory mode

Press the MEMORY MODE switch to recall a set of picture settings programmed in memory.

Pressing the switch locks the functions of the front-panel PHASE, CHROMA, BRIGHT, CONTRAST controls, and remote-control picture adjustments not to be operated.

Press again to release memory mode.

Setting programming of the picture being monitored

The settings of the picture being monitored can be programmed in memory.

- Settings programmable in memory mode:
 - Settings of the CONTRAST, BRIGHT, CHROMA and PHASE controls on the front panel
 - On-screen menu function settings (except RGB/COMPO(SDI))
 - Remote-control picture adjustment settings

- Check the MEMORY MODE switch is off.
- Press the MENU button.
- Press the ▲ or ▼ button to select MEMORY MODE. Then press the ENTER button.
- Press the ENTER button to programme.
 - Press the ◀ or ▶ button to cancel.

Revision of memory mode

Programmed picture settings can be revised if necessary.

- Press the MEMORY MODE switch to activate memory mode.
- Press the MENU button to call up display [1] on screen.



- If you attempt to operate a locked function, "MEMORY MODE ON!" appears on screen for approx. 2 seconds to indicate the function cannot be operated.



- Programmed picture settings are kept in memory after the power is turned off.

"MEMORY MODE"
Are you sure?
"Yes" then [ENTER]
"No" then [3] or [2]



- No matter what video signal is input, all items appear on screen. However, depending on the type of input video signal, some functions might not operate even if their settings are made.

"MEMORY MODE REVISE"
▶ PICTURE ADJUSTMENT
ASPECT RATIO :4:3
FILTER SELECT :COMB
PEAKING FREQ. :2.5MHZ
PEAKING LEVEL :0dB
AFC :NORMAL
COLOR TEMP. :6500
NTSC SETUP :0
COMPO. LEVEL :SMPT
[ENTER] [3]

MEMORY MODE (continued)

- Press the ▲ or ▼ button to select a function to be revised.

Press the ENTER button after selecting PICTURE ADJUSTMENT to call up display [2].

After making all settings on screen, press the MENU button to make display [1] appear.

- Press the ◀ or ▶ button to change the set level.

Adjustable CONTRAST, BRIGHT, CHROMA or PHASE range depends on each set level previously stored in memory. MAX appears to indicate maximum level that cannot be increased. MIN appears to indicate minimum level that cannot be decreased.



- If the ENTER button is pressed after a function other than PICTURE ADJUSTMENT is selected, the on-screen display changes into a single-line one. To select another function after making a change in function, press the MENU button to restore display [1].

Variable setting range		Variable setting range		Default set level
Function				
PICTURE ADJUSTMENT	CONTRAST	-20 to +20		0
	BRIGHT	-20 to +20		0
	CHROMA	-20 to +20		0
	PHASE	-20 to +20		0
ASPECT RATIO	4:3	16:9		4:3
FILTER SELECT	COMB	BOTH	NOTCH	COMB
PEAKING FREQ.	2.5MHZ	5.0MHZ		2.5MHZ
PEAKING LEVEL	0dB	+1dB ... +9dB		0dB
AFC	NORMAL	FAST	SLOW	NORMAL
COLOR TEMP.	9300	6500		6500
NTSC SETUP	0	7.5		0
COMPO. LEVEL	SMPT	BETA00	BETA75	SMPT

- With display [1] on screen, press the MENU button to make display [3] appear.

- Press the ENTER button to programme.
- Press the ◀ or ▶ button to cancel.

"MEMORY MODE REVISE"
▶ CONTRAST :0
BRIGHT :0
CHROMA :0
PHASE :0
[ENTER] [2]

"MEMORY MODE REVISE"
Are you sure?
"Yes" then [ENTER]
"No" then [3] or [2]

SET-UP FOR MONITOR INSTALLATION

When installing the monitor, make set-up adjustments required for the picture settings to match conditions where the monitor is to be used.

To call up SET-UP MENU and select a function:

- To make [1] (SET-UP MENU) appear, with the ENTER button pressed, press the MENU button.
- Press the ▲ or ▼ button to select an adjustment item.
(To set STATUS DISPLAY or CONTROL LOCK, steps 3 and 4 are not necessary.)
- Press the ENTER button to call up the adjustment menu [2] of a selected item (e.g. WHITE BALANCE).
- Press the ▲ or ▼ button to select a function to be adjusted.
- Press the ◀ or ▶ button to change the setting.
- With the display [1] on screen, press the ▲ or ▼ button to select another function and repeat step 5.
- Press the MENU button to complete. SET-UP MENU disappears.
 - To make [1] (SET-UP MENU) disappear:
Press the MENU button.
 - To make [2] (e.g. WHITE BALANCE) disappear:
Press the MENU button twice.

(SET-UP MENU)
▶ SIZE/CENTERING
▶ WHITE BALANCE ADJUST
▶ REMOTE SELECT
▶ STATUS DISPLAY : ON
▶ CONTROL LOCK : OFF
[ENTER]

[1]
(WHITE BALANCE)
▶ RED DRIVE : 0
▶ BLUE DRIVE : 0
▶ GREEN DRIVE : 0
▶ RED CUTOFF : 0
▶ GREEN CUTOFF : 0
▶ BLUE CUTOFF : 0
[ENTER]

[2]
NOTE

- Each time the MENU button is pressed, the previous menu is restored.

NOTE

- SIZE/CENTERING appears and the function is operable only when monitoring the picture of analogue RGB video signals.

SIZE/CENTERING (size/positioning adjustments of RGB signal pictures)

For analogue RGB video signal pictures, horizontal size, vertical size, horizontal positioning and vertical positioning can be finely adjusted.

Adjustment (level)	Function
H. POSITION (-10, -9, ..., 0, ..., +9, +10)	+ moves the picture to right. - moves the picture to left.
V. POSITION (-10, -9, ..., 0, ..., +9, +10)	+ moves the picture down. - moves the picture up.
H. SIZE (-10, -9, ..., 0, ..., +9, +10)	+ makes the picture wider. - makes the picture narrower.
V. SIZE (-10, -9, ..., 0, ..., +9, +10)	+ makes the picture higher. - makes the picture lower.

SET-UP FOR MONITOR INSTALLATION (continued)

NOTE

- By making white balance adjustments on SET-UP MENU, * appears to the right of the COLOR TEMP. setting on MENU (see page 11).

WHITE BALANCE ADJUST (white balance adjustments)

Before making these adjustments, select the colour temperature 9300K or 6500K on MENU.

Adjustment (level)	Function
RED DRIVE (-10, -9, ..., 0, ..., +9, +10)	Adjusts the drive level of a red signal component.
GREEN DRIVE (-10, -9, ..., 0, ..., +9, +10)	Adjusts the drive level of a green signal component.
BLUE DRIVE (-10, -9, ..., 0, ..., +9, +10)	Adjusts the drive level of a blue signal component.
RED CUTOFF (-10, -9, ..., 0, ..., +9, +10)	Sets the cut-off voltage of a red signal component.
GREEN CUTOFF (-10, -9, ..., 0, ..., +9, +10)	Sets the cut-off voltage of a green signal component.
BLUE CUTOFF (-10, -9, ..., 0, ..., +9, +10)	Sets the cut-off voltage of a blue signal component.

REMOTE SELECT (TALLY/REMOTE-terminal settings)

Via the TALLY/REMOTE terminal, the tally lamp can be turned on/off, or a function (selected from display [3] shown on the right) can be operated using an external control.

INPUT setting indications and selected inputs

*: Indicates when deactivating the remote control via the TALLY/REMOTE terminal

Setting indication	NOT USE	A ↔ B	A ↔ Y/C	A ↔ RGB	A ↔ COMPO	B ↔ Y/C	B ↔ RGB	B ↔ COMPO	Y/C ↔ RGB	Y/C ↔ COMPO	RGB ↔ COMPO
Short-circuit	*	A	A	A	A	B	B	B	Y/C	Y/C	RGB
Open-circuit	*	B	Y/C	RGB	COMPO	Y/C	RGB	COMPO	RGB	COMPO	COMPO

[3]

(REMOTE SELECT)
▶ INPUT : A-B
CNTL-1 : UNDER SCAN
CNTL-2 : ASPECT RATIO
[ENTER]

CNTL-1/CNTL-2 setting indications and set positions

*: Indicates when deactivating the remote control via the TALLY/REMOTE terminal

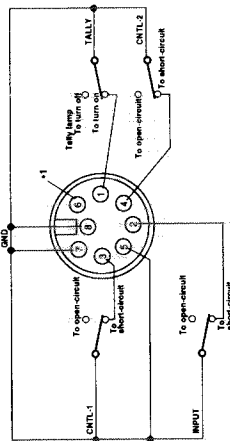
Setting indication	NOT USE	UNDER SCAN	PULSE CROSS	COLOR OFF	BLUE CHECK	EXTERNAL SYNC	ASPECT RATIO	COLOR TEMP	AUDIO MUTE
Short-circuit	*	ON	ON	ON	ON	External	16:9	6500	ON
Open-circuit	*	OFF	OFF	OFF	OFF	Internal	4:3	9300	OFF

NOTE

- When the TALLY/REMOTE terminal is used, the following functions become deactivated (except when they are set to "NOT USE"):
- Front INPUT SELECT and EXT SYNC switches
- Front UNDER SCAN, PULSE CROSS, COLOR OFF and BLUE CHECK switches
- On-screen MENU's ASPECT RATIO and COLOR TEMP. functions
- Remote MUTE key
- If a function is applied to both CNTL-1 and CNTL-2, CNTL-1 has priority.
- *1: Pin 6 is DC power output pin. It outputs DC 5 V when the monitor's power is on. (Do not short-circuit pin 6 directly to ground.)

TALLY/REMOTE terminal functions

All controls via TALLY/REMOTE terminal are made by short-circuiting or open-circuiting any pin from Pin 1 to 4 and either Pin 7 or 8 (GND each) of this terminal.
When using this terminal, be sure to short-circuit Pin 5 and either Pin 7 or 8.



SET-UP FOR MONITOR INSTALLATION (continued)

STATUS DISPLAY (setting the status display to on/off)

When the power is turned on or the input mode is switched, the status display (colour system and input mode) appears on screen. The display can be set to on or off.

Setting	Function
ON	Status display appears.
OFF	Status display does not appear.

CONTROL LOCK (deactivation of front-control functions)

Set CONTROL LOCK to ON on screen to deactivate the front-control functions (front VOLUME control and remote volume control are operable).

Setting	Function
ON	Deactivates the front controls (except front/remote volume controls).
OFF	Releases deactivated functions.



- If you attempt to operate a locked function, "CONTROL LOCK ON!" appears on screen for approx. 2 seconds to indicate the function cannot be operated.
- Once CONTROL LOCK is deactivated, the current settings of the front-control knobs and buttons are activated.
- If the power is turned off with CONTROL LOCK activated, the function is kept in memory.

PICTURE SETTING INITIALISATION

MENU and/or SET-UP MENU settings including added changes can be reset (initialised) to their factory-preset conditions.

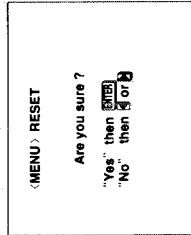


To initialise MENU settings only

MENU settings (except MEMORY MODE and RGB/COMPO(SDI)) can be exclusively reset:

- For factory-presets on the MENU settings, see page 21

1. With the ▼ button pressed, press the MENU button to display [1] on screen.
2. ● Press the ENTER button to reset.
 - Press the ◀ or ▶ button to cancel.



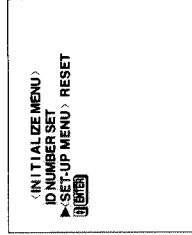
- MENU and PICTURE ADJUST settings (except MEMORY MODE and RGB/COMPO(SDI)) can also be simultaneously reset via the optional wireless remote control unit:

1. Press the MENU key to display MENU on screen.
2. Press the RESET key to execute.

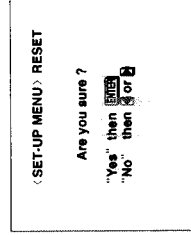
To initialise both MENU/SET-UP MENU settings

MENU and SET-UP MENU settings other than MEMORY MODE and RGB/COMPO(SDI) can be reset at the same time. In this case, PICTURE ADJUST settings via remote control are also reset, and the monitor's ID number is also reset to 00.

1. Press the POWER switch to turn the power off.
2. With the ▼ and MENU buttons pressed, press the POWER switch to turn the power on. Keep pressing the ▼ and MENU buttons until [2] appears on screen.
3. Press the ▲ or ▼ button to select SET-UP MENU RESET. Then press the ENTER button to display [3] on screen.
4. ● Press the ENTER button again to execute.
 - Press the ◀ or ▶ button to cancel.



[2]



[3]

REMOTE CONTROLS

The optional wireless remote control unit (RM-C550W) operates the following:

- On-screen menu functions (MENU, SET-UP MENU, etc.)
- Picture adjustments (CONTRAST, BRIGHT, CHROMA, PHASE)
- Sound adjustments (VOLUME, MUTE)

On-screen menu remote operation

Remote keys and front controls with the same designation share the common functions. For detailed operation, see instructions about each menu function in this manual.

Picture adjustments

Each adjustable range depends on the setting of the front CONTRAST/ BRIGHT/CHROMA or PHASE control. If an adjustment is made via remote control with the front control set approximately to the maximum or minimum, the level may indicate a certain change on screen but may not actually increase or decrease.

1. Press the PICTURE key to display PICTURE ADJUST.
2. Press the ▲ or ▼ key to select an item.
3. Press the ◀ or ▶ key to change the level:
◀ : Moves the cursor to left (to decrease the level).
▶ : Moves the cursor to right (to increase the level).
4. Press the ▲ or ▼ key to another item and repeat step 3.
5. Press the PICTURE key to complete.

- To standardise all settings on PICTURE ADJUST:
After step 1, press the RESET key.

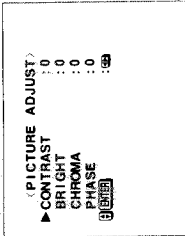
Sound adjustments

A variable range depends on the setting of the front VOLUME control. If audio level is remote-controlled with front VOLUME control set approximately to the maximum or minimum, the level may indicate a certain change on screen but may not actually increase or decrease.

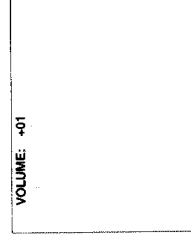
- Press the VOLUME – or + key to decrease or increase the level (within ± 20).
- Press the MUTE key to mute the sound. MUTE appears on screen for approx. 3 seconds. Press again to release.



- When monitoring the picture of analogue RGB signals, component signal or black-and-white signal, CHROMA and PHASE do not appear and cannot be adjusted
- When a video signal of the PAL system is input to the monitor, PHASE does not appear and cannot be adjusted.



- Each time the PICTURE key is pressed, the previous display is restored.



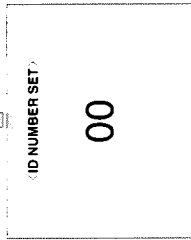
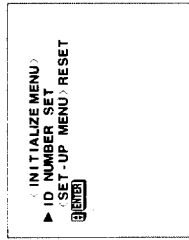
- If the power is turned off with sound-muting activated, the function is kept in memory.
- To release sound-muting, turn the front VOLUME control or press the remote VOLUME – or + key.

EACH REMOTE CONTROL OF PLURAL MONITORS

To operate or adjust plural units of monitors, by programming and assigning an ID number (00 to 99) for each monitor, a specified monitor can be remote-controlled.

To programme an ID number (use front controls):

1. Press the POWER switch to turn the power off.
2. With the ▼ and MENU buttons pressed, press the POWER switch to turn the power on. Keep pressing the ▼ and MENU buttons until [1] appears.
3. Press the ▲ or ▼ button to select ID NUMBER SET. Then press the ENTER button to display [2].
4. Select an ID number.
 - Press the ▶ button to increase.
 - Press the ◀ button to decrease.
5. Press the ENTER button to programme.



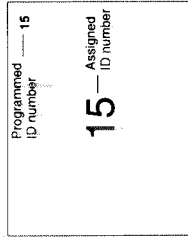
- ID number 00 is always indicated in red.

To call up an ID number (use remote unit):

1. Press the DISPLAY key to indicate a programmed ID number at top right of the screen.
 - Red-indicated ID number:
indicates the monitor can be remote-controlled.
 - Green-indicated ID number:
indicates the monitor cannot be remote-controlled.
2. Press the DISPLAY key to make the number disappear.

To assign a monitor (use remote control):

1. Press the DISPLAY key to display the monitor's programmed ID number.
2. Press the numeric keys to enter the monitor's ID number.
The entered ID number appears and blinks on screen centre.
3. Press the ID SET key to complete.
The programmed ID number in the top right of the screen turns red to indicate the monitor was assigned. Other monitors' ID numbers are indicated in green.
4. After adjusting the monitor, repeat steps 2 to 4 to adjust each monitor if necessary.
5. Press the DISPLAY key to clear on-screen ID numbers.



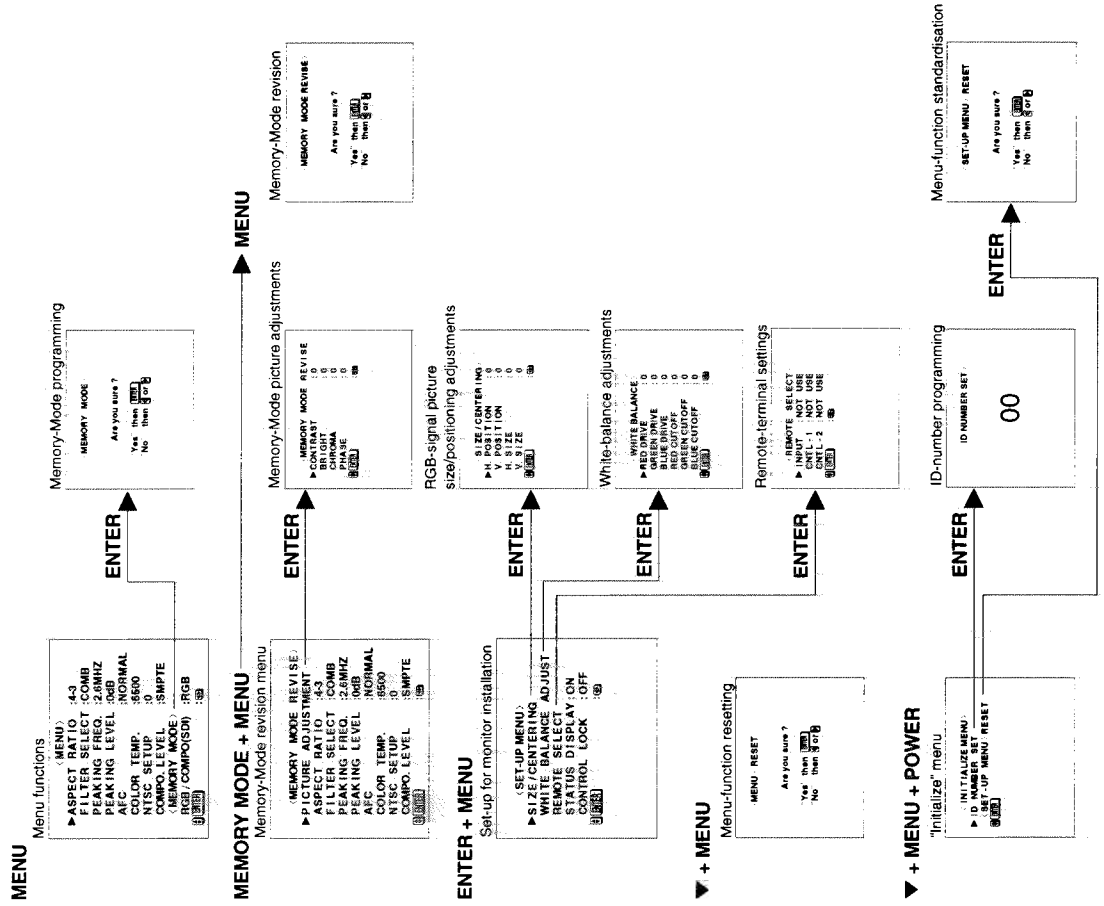
BEFORE CALLING FOR SERVICE

Before concluding a problem has occurred, check the following points. If the problem persists after carrying out the checks, disconnect the power cord from the AC outlet and consult the dealer from whom you purchased the monitor.

Problems	Points to be checked	Measures
Inoperable adjustment controls or buttons.	Is MEMORY MODE switched on?	Switch off.
	Is CONTROL LOCK activated?	Deactivate it.
Abnormal picture adjustments with all controls at centre.	Are PICTURE ADJUST menu settings changed via remote control?	Reset to standard settings.
Inoperable picture synchronisation.	Is EXT SYNC switched on?	Switch to off.
Inoperable remote-controlled picture adjustments.	Are the front controls set approximately to the maximum or minimum?	If so, the settings may not extend any more via remote control (although setting levels indicated on screen may show a slight change).
Assigned remote control ID number operates another monitor.	Is ID number 00 programmed for other monitors?	Programme an ID number other than 00.
	Do other monitors indicate a red ID number?	Assign the ID number again.
Inoperable remote control.	Is the ID number programmed for other monitors assigned?	Assign the monitor's programmed ID number.
No sound via audio signal input.	Does the audio input terminal match the video input terminal?	Each audio input terminal is linked with a video input terminal.
No INITIALIZE MENU display.	Are you pressing the ▼ and MENU buttons until it appears?	Keep pressing these buttons until it appears.
Inoperable CNTL-2 external control via TALLY/REMOTE terminal.	Is a function applied common to CNTL-1 and CNTL-2?	Set other functions to CNTL-2.

MENU DISPLAY CHART

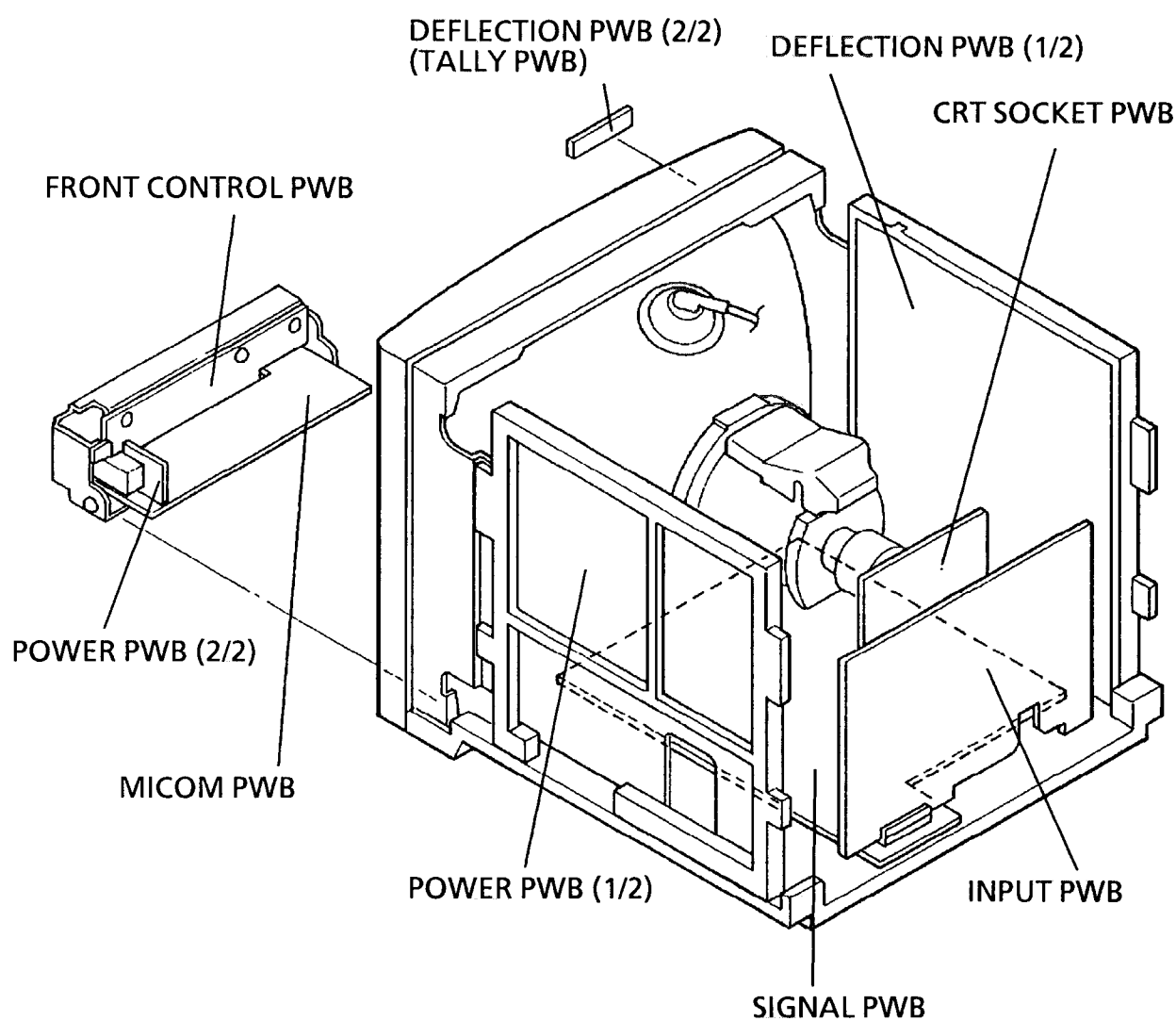
Adjustments or settings preset at the factory are shown in the menus. For PICTURE ADJUST MENU via remote control, see page 18.



SPECIFICATIONS

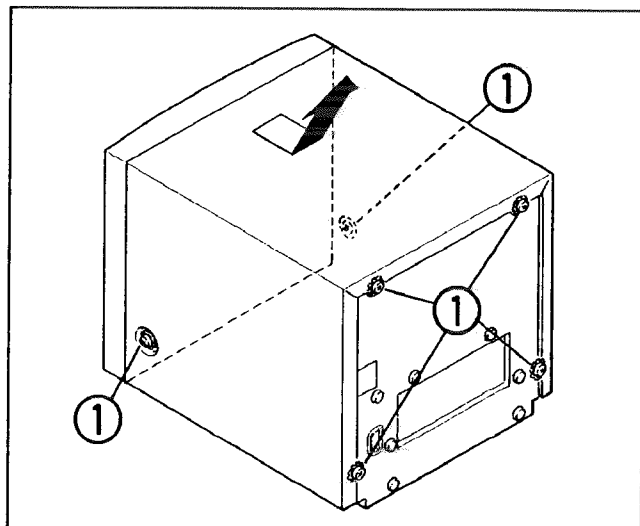
Type	: Colour video monitor	: Analogue RGB
Colour systems	: NTSC 3.58 MHz, NTSC 4.43MHz, PAL	: RGB/COMPO(SDI)
Picture tube	: [BM-H2000PN]	(1 line: common with Y, R-Y, B-Y, component),
	50 cm diagonally measured,	BNC x 6 (with 3 bridge-connected outputs)
	90°deflection, in-line gun, medium-high-definition cathode-ray tube,	Termination switches provided
	trio-dot type (dot pitch of 0.4 mm),	R,B: 0.7 V p-p, 75Ω
	EBU standard phosphor	G: 0.7 V p-p, 75Ω
	: [BM-H1400PN]	G on sync: 1.0 V p-p, 75Ω, negative sync
	36 cm diagonally measured,	: Y, R-Y, B-Y component
	90°deflection, in-line gun, high-definition lined cathode-ray tube,	: RGB/COMPO(SDI)
	trio-dot type (dot pitch of 0.28 mm),	(1 line: common with analogue RGB)
	EBU standard phosphor	Y: 1.0 V p-p, 75Ω, negative sync
	: [BM-1400PN-A]	R-Y, B-Y: 0.7 V p-p, 75Ω
	36 cm diagonally measured,	: SYNC (1 line),
	90°deflection, in-line gun, medium-high-definition tinted cathode-ray tube, trio-dot type (dot pitch of 0.39 mm), P-22 phosphor	BNC x 2 (with 1 bridge-connected output)
Screen size (WxH)	: 399 x 298 mm [BM-H2000PN] 280 x 210 mm [BM-H1400PN /BM-1400PN-A]	0.2 – 4.0 V p-p composite sync, 75Ω, negative sync
Scanning frequency	: H: 15.734 kHz (NTSC 3.58/4.43 MHz) 15.625 kHz (PAL) V: 59.94 Hz (NTSC 3.58/4.43MHz) 50 Hz (PAL)	Termination switch provided
Horizontal resolution	: 750 TV lines or more [BM-H2000PN /BM-H1400PN-A]	: AUDIO A, B: RGB/COMPO(SDI) (3 lines), RCA x 2 each (with 1 bridge-connected output)
Colour temperature	: 620 TV lines or more [BM-H2000PN /BM-H1400PN-A] 6500K: x = 0.313, y = 0.329 9300K: x = 0.283, y = 0.297 (selectable)	500 mV rms, high impedance
Video inputs	: Composite video INPUT A, B (2 lines), BNC x 2 each (with 1 bridge-connected output) Termination switches provided 1.0 V p-p, 75Ω, negative sync : Y/C	Tally/remote terminal : TALLY/REMOTE, DIN (8-pin) x 1
	Y/C (1 line), Mini-DIN (4-pin) x 2 (with 1 bridge-connected output) Termination switch provided Y: 1.0 V p-p, 75Ω, negative sync C (NTSC 3.58/4.43 MHz): 0.286 Vp-p, 75Ω C (PAL): 0.3 V p-p, 75Ω	Audio power output : 1.6 W [BM-H2000PN] 0.8 W [BM-H1400PN/BM-1400PN-A]
		Built-in speaker : 9 x 5 cm oval x 1
		Operation temperature : 0 – 40°C (20 – 80% RH)
		Power requirements : 230 V AC, 50/60 Hz
		Power consumption : 0.6 A [BM-H2000PN/BM-H1400PN] 0.7 A [BM-1400PN-A]
		Dimensions (WxHxD) : 449 x 431 x 511 mm [BM-H2000PN] 346 x 332 x 410 mm [BM-H1400PN /BM-1400PN-A]
		Weight : 30 kg [BM-H2000PN] 16.2 kg [BM-H1400PN/BM-1400PN-A]
		Provided accessory : Power cord x 1
Optional accessories		: Wireless remote control unit
		• RM-C550W
		Rack-mount adapter
		• RK-20E [BM-H2000PN]
		• RK-1400E [BM-H1400PN /BM-1400PN-A]
		Digital interface unit
		• IF-C2000SDE

MAIN PARTS LOCATION



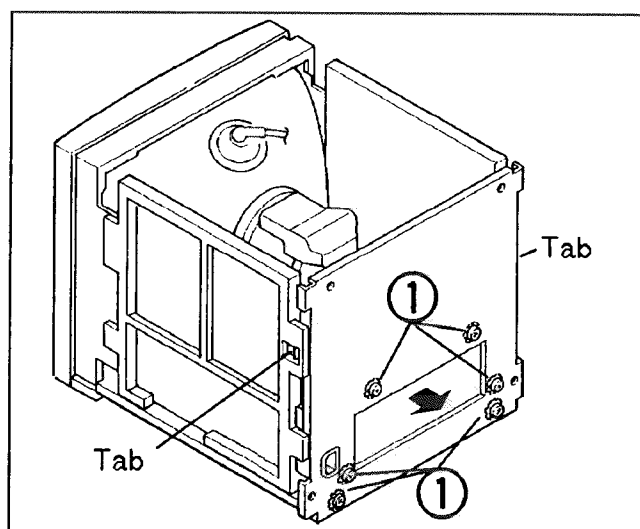
SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE



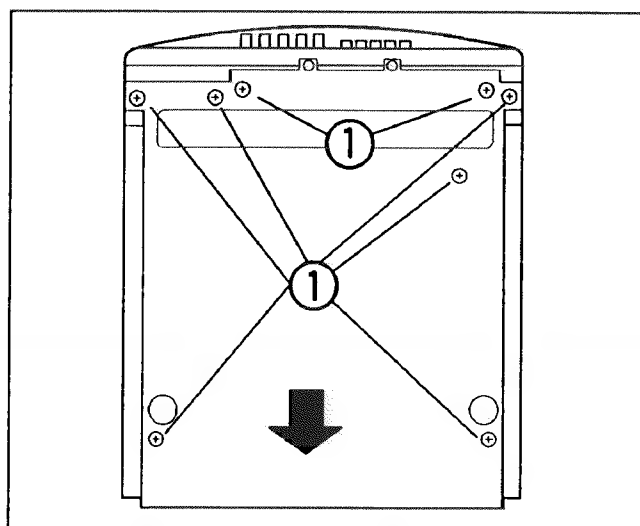
■ TOP COVER

1. Take out 6 screws ①
2. Slightly spread the bottom of the cover, shift it rearward, then raise the cover to remove it.



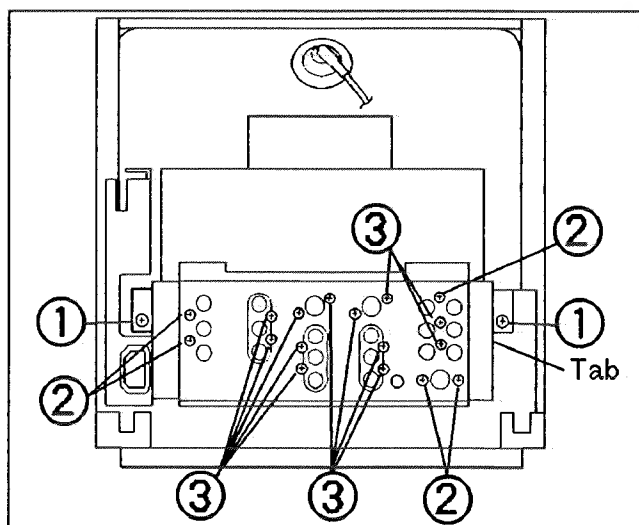
■ REAR PANEL

1. Remove the top cover.
2. Take out 6 screws ①.
3. Press the tabs at both edges and remove the rear panel in the direction indicated by the arrow.



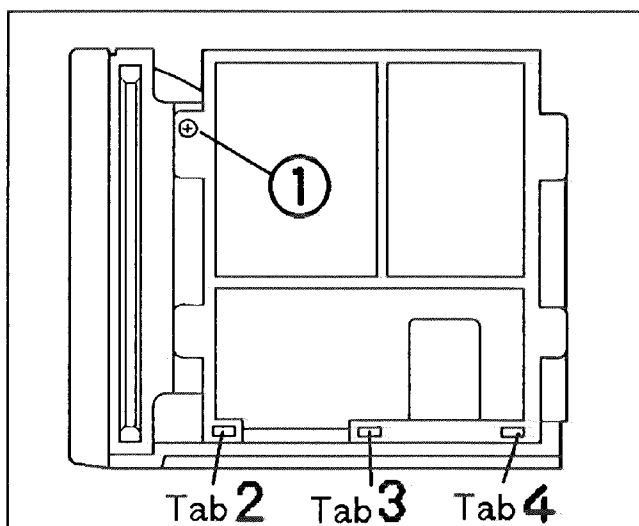
■ BOTTOM COVER

1. Remove the top cover and rear panel.
2. Take out 8 screws ①.
3. Slightly raise the bottom cover and remove it in the direction indicated by the arrow.



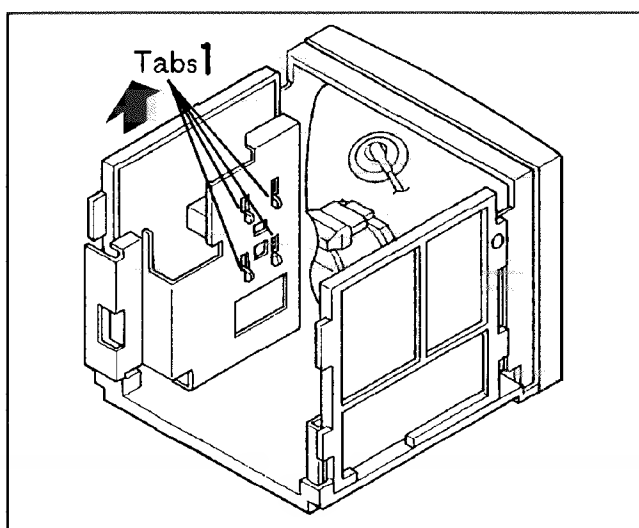
■ INPUT PWB, TERMINAL SHEET AND TERMINAL BRACKET

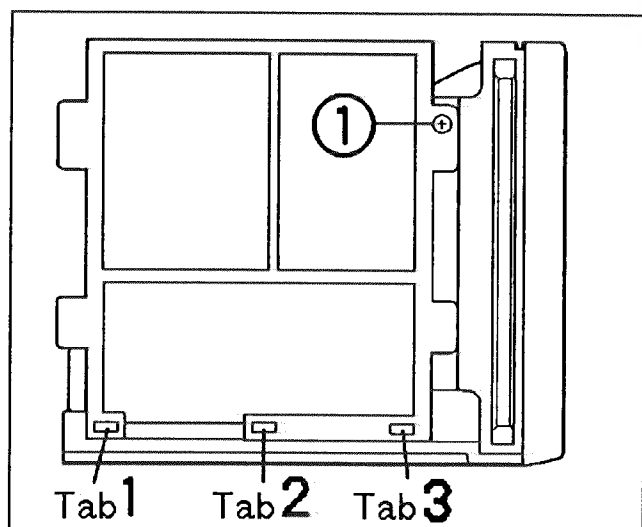
1. Remove the top cover and rear panel.
2. Take out 2 screws ①.
3. While pressing the bottom SIGNAL PWB, pull the INPUT PWB upward to remove it. Carefully engage it with the tab to allow powered checks.
4. Take out 5 screws ② and remove the terminal sheet.
5. Take out 12 screws ③ and remove the terminal bracket.



■ POWER PWB

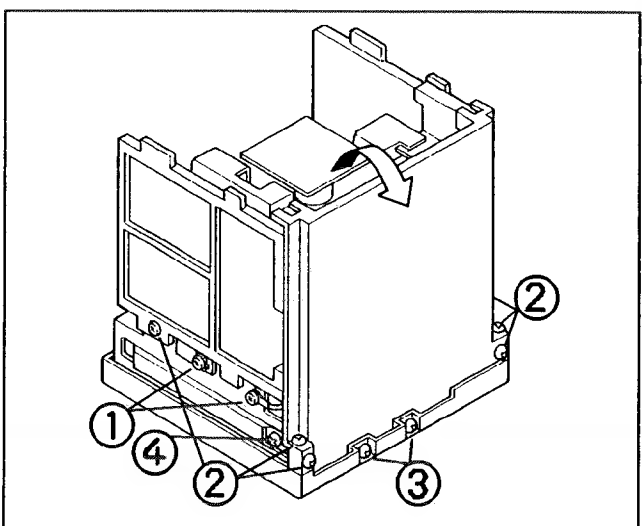
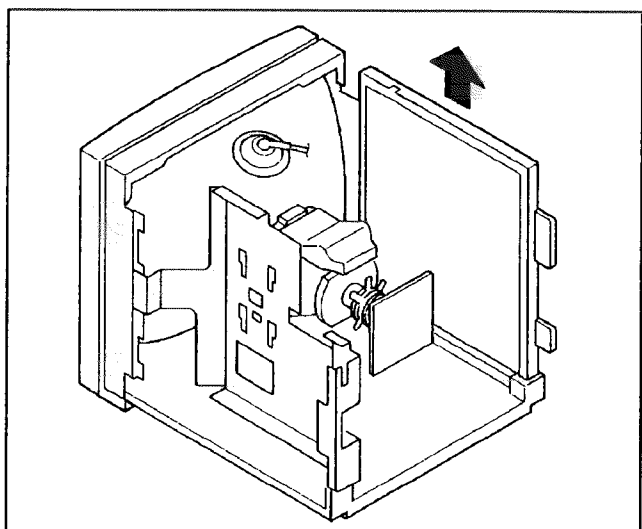
1. Remove the top cover and rear panel.
2. Take out 1 screw ①.
3. While sliding 4 tabs 1, raise the PWB.
4. Insert a screwdriver or similar tool and disengage tabs 2, 3 and 4, then remove the POWER SUPPLY PWB.





■ DEFLECTION PWB

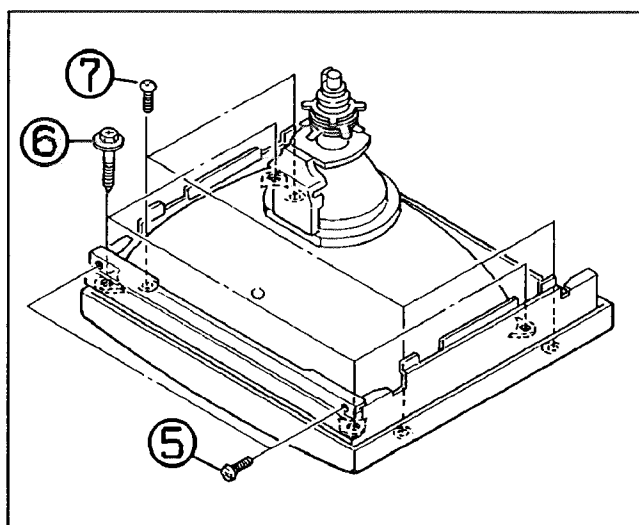
1. Remove the top cover and rear panel.
2. Take out 1 screw ①.
3. While raising the DEFLECTION PWB, insert a screwdriver or similar tool and disengage tabs 1, 2 and 3, then remove the DEFLECTION PWB.



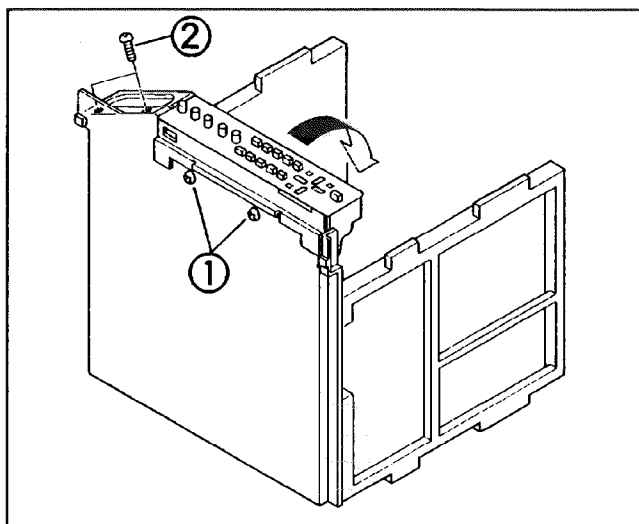
■ CRT

1. Remove the top cover and rear panel.
2. Take out 2 screws ①, 6 screws ②, 2 screws ③ and 1 screw ④.
3. Remove the CRT SOCKET PWB, anode cap and DY wire, Tally wire, Degauss coil wire. Tilt the chassis in the direction indicated by the arrow and remove it.

Note: Use a cushion to avoid scratching the CRT face.

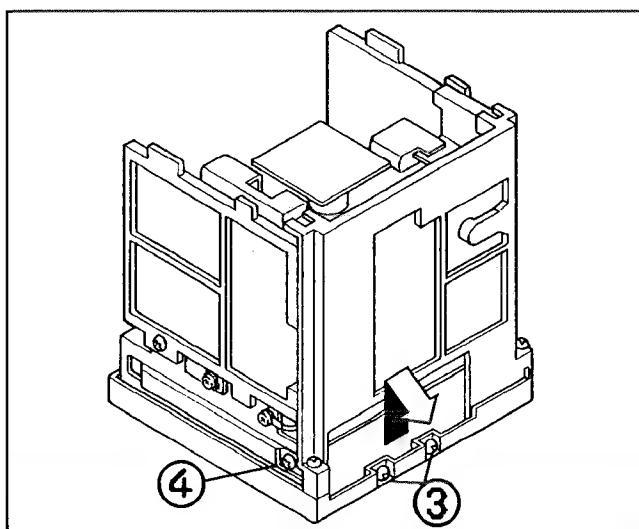


4. Take out 2 screws ⑤ and remove the top beam.
5. Take out 4 screws ⑦ and remove the left and right CRT side shields.
6. Take out 4 screws ⑥ and remove the CRT.



■ FRONT CONTROL BRACKET AND SPEAKER

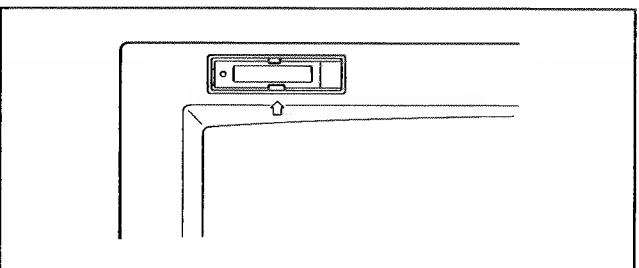
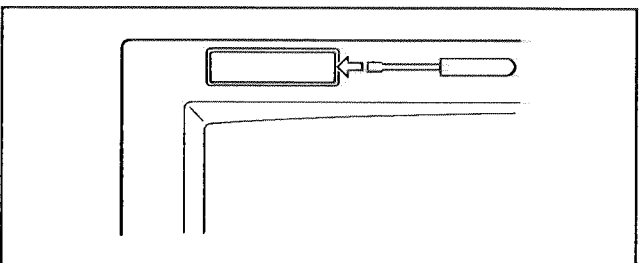
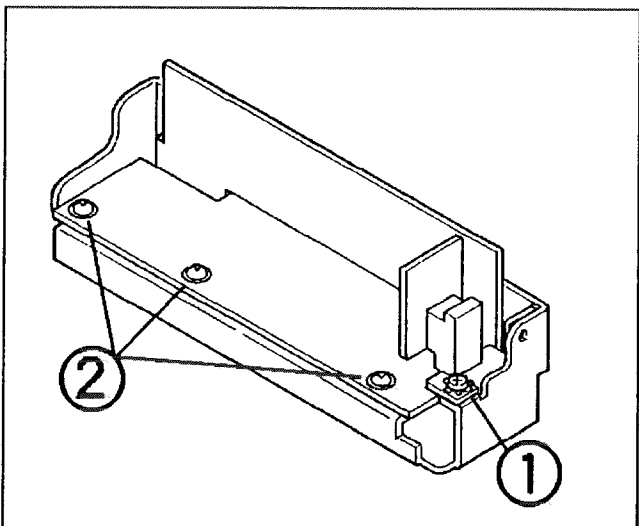
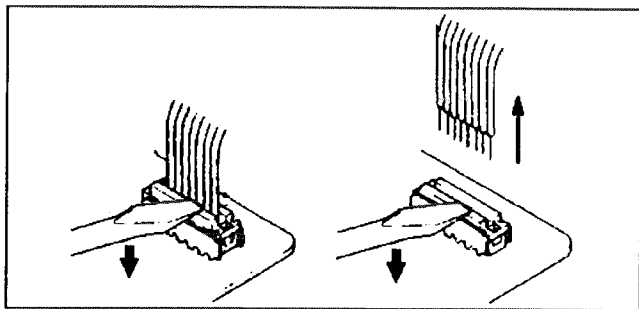
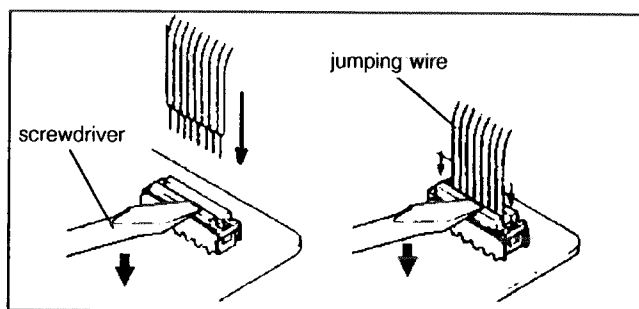
1. Remove the top cover and rear panel, and disengage the chassis.
2. Take out 2 screws ① and remove the front control panel bracket (including the MICOM PWB).
3. Take out 2 screws ② and remove the speaker.



● The front control bracket can be removed without removing the chassis.

1. Remove the bottom cover and take out 2 screws ③ and 1 screw ④.
2. Disengage the power switch connector.
3. While raising the front control bracket, remove it outward. Use care not to snag the volume knob with the front panel.

Note: Work is easier with the set upside down.



● MICOM - SIGNAL PWB jump wires

Connection

1. Check that the ends of the jump wires are straight and aligned.
2. Use a screwdriver or similar tool to press the portion of the connector labelled Push. (In practice, the wires can be inserted without pressing.)
3. Align the ends of the jump wire with the respective holes of the connector and insert vertically.

Disconnection

1. Use a screwdriver or similar tool to press the portion of the connector labelled Push.
2. While holding the connector depressed, pull the wires upward to disconnect them.

■ POWER SWITCH, FRONT CONTROL PWB AND MICOM PWB

1. Remove the front control bracket (including MICOM PWB).
2. Take out 1 screw ① and remove the power switch.
3. Take out 3 screws ② and remove the FRONT CONTROL PWB and MICOM PWB.
4. Disengage the PWB connectors.

■ DEFLECTION PWB (TALLY PWB)

1. While using care not to scratch the front panel, insert a flat blade screwdriver into the edge of the tally cover and remove the cover.
2. Since the TALLY PWB appears, press the top and bottom tabs downward with the screwdriver.
3. Pull the PWB downward to tilt and remove the PWB.

REPLACEMENT OF CHIP COMPONENT

CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

SOLDERING IRON

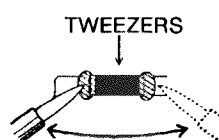
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

REPLACEMENT STEPS

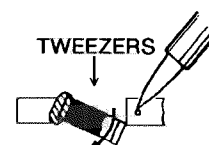
1. How to remove Chip parts

●Resistors, capacitors, etc

- (1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

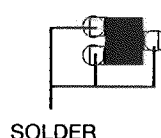


- (2) Shift with tweezers and remove the chip part.

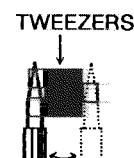


●Transistors, diodes, variable resistors, etc

- (1) Apply extra solder to each lead.



- (2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

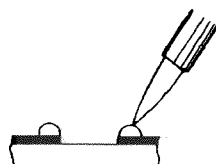


Note: After removing the part, remove remaining solder from the pattern.

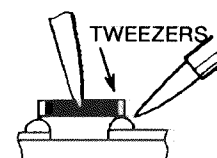
2. How to install Chip parts

●Resistors, capacitors, etc

- (1) Apply solder to the pattern as indicated in the figure.

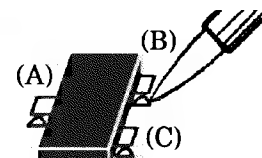
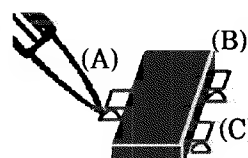


- (2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.



●Transistors, diodes, variable resistors, etc

- (1) Apply solder to the pattern as indicated in the figure.
- (2) Grasp the chip part with tweezers and place it on the solder.
- (3) First solder lead A as indicated in the figure.
- (4) Then solder leads B and C.



SERVICE MENU ENTRY

- If the separately sold remote controller (RM-C550W) is available, this can be used for adjustments. Normally, perform adjustments using the set front control panel.
1. While holding ENTER depressed, press DEGAUSS.
 2. The letter S appears at the upper left of the screen.
 3. While holding ENTER depressed, press MENU.
 4. The screen display changes to <SERVICE MENU> PLEASE, DON'T TOUCH!
 5. Press the left [←] or right arrow [→] to display the SERVICE MENU.
- If Step 4 state continues for more than 5 seconds without a further operation, the display extinguishes and the mode is released.

ITEM SELECTION

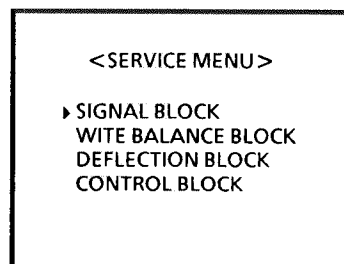
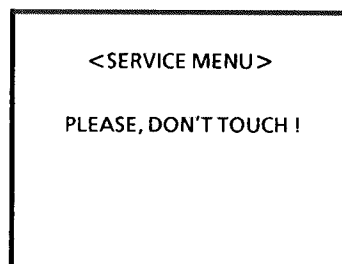
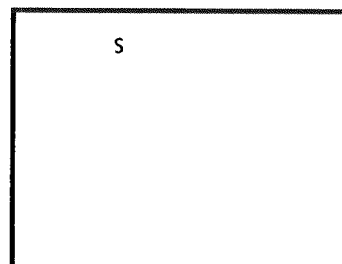
- While the SERVICE MAIN MENU is displayed:
1. Press the up [↑] or down arrow [↓] to select the item.
 2. After selecting the item, press ENTER.
 3. The adjustment mode menu is displayed.

SETTING VALUE CHANGE

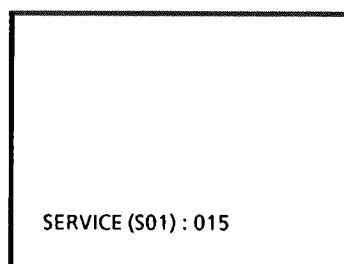
- While the adjustment mode menu is displayed:
1. Press the right arrow [→] to change the setting value in the + direction.
 2. Press the left arrow [←] to change the setting value in the - direction.
 3. Press the up [↑] or down arrow [↓] to change the adjustment item number.

SERVICE MENU EXIT

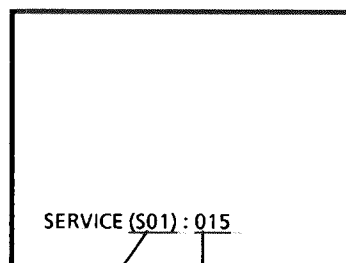
1. When settings are completed, press MENU.
2. The SERVICE MAIN MENU returns.
3. Again press MENU.
4. The screen display extinguishes and the service mode is exited.



SERVICE MAIN MENU



ADJUSTMENT MODE MENU



Adjustment item number

Setting value

■ SIGNAL SYSTEM SETTINGS

No.	Input	Signal	Item	Data type	Variable range	Initial value
S01			Bright	Standard value	0~63	15
S02	Video	NTSC	Chroma	Standard value	0~63	32
S03	Video	NTSC	Phase	Standard value	0~63	32
S04	Video	NTSC	Contrast	Standard value	0~63	32
S05	Video	PAL	Chroma	Standard value	0~63	32
S06	Video	PAL	Contrast	Standard value	0~63	32
S07	Video Y/C	N443	Phase	Standard value	0~63	32
S08	Y/C	NTSC	Chroma	Standard value	0~63	32
S09	Y/C	NTSC	Phase	Standard value	0~63	32
S10	Y/C	NTSC PAL N443	Contrast	Standard value	0~63	32
S11	Y/C	PAL	Chroma	Standard value	0~63	32
S12	Color difference	N10/ SMPTE	Chroma	Standard value	0~63	32
S13	Color difference		Contrast	Standard value	0~63	32
S14	RGB		Contrast	Standard value	0~63	32
S15	Video	N443	Chroma	Correction value	0~255	3
S16	Y/C	N443	Chroma	Correction value	0~255	3
S17	Color difference	BETA	Chroma	Correction value	0~255	247
S18			Bright →pulse cross	Correction value	0~255	20
S19			Contrast →pulse cross	Correction value	0~255	236
S20			Bright →underscan	Correction value	0~255	0
S21			Contrast →underscan	Correction value	0~255	252
S22			Bright →16 : 9	Correction value	0~255	0
S23			Contrast →16 : 9	Correction value	0~255	250
S24	Video	SECAM	Chroma	Standard value	0~63	32
S25	Video	SECAM	Contrast	Standard value	0~63	32
S26	Y/C	SECAM	Chroma	Standard value	0~63	32

No.	Input	Signal	Item	Data type	Variable range	Initial value
S27	Y/C	SECAM	Contrast	Standard value	0~63	32
S28			Peak Drive Limit	Fixed value	0~255	45
S29			Control Reg - 1	Fixed value	0~255	193
S30			Control Reg - 2	Fixed value	0~255	0
S31	Video	NTSC,B/ W 60	Y Delay	Fixed value	0~255	65
S32	Y/C	NTSC,B/ W 60	Y Delay	Fixed value	0~255	73
S33	Video	PAL,B/W 50	Y Delay	Fixed value	0~255	82
S34	Y/C	PAL,B/W 50	Y Delay	Fixed value	0~255	82
S35	Video	N443	Y Delay	Fixed value	0~255	82
S36	Y/C	N443	Y Delay	Fixed value	0~255	82
S37	Video	SECAM	Y Delay	Fixed value	0~255	82
S38	Y/C	SECAM	Y Delay	Fixed value	0~255	82
S39	Color difference		Y Delay	Fixed value	0~255	64

■ WHITE BALANCE SETTINGS

No.	Color temperature	Scan	Item	Data type	Variable range	Initial value
W01	9300	Normal	R - Cutoff	Standard value	0~63	37
W02	9300	Normal	G - Cutoff	Standard value	0~63	25
W03	9300	Normal	B - Cutoff	Standard value	0~63	23
W04	9300	Normal	R - Drive	Standard value	0~63	34
W05	9300	Normal	G - Drive	Standard value	0~63	32
W06	9300	Normal	B - Drive	Standard value	0~63	30
W07	6500	Normal	R - Cutoff	Standard value	0~63	48
W08	6500	Normal	G - Cutoff	Standard value	0~63	25
W09	6500	Normal	B - Cutoff	Standard value	0~63	12
W10	6500	Normal	R - Drive	Standard value	0~63	37
W11	6500	Normal	G - Drive	Standard value	0~63	32
W12	6500	Normal	B - Drive	Standard value	0~63	24

No.	Color temperature	Scan	Item	Data type	Variable range	Initial value
W13	3200	Normal	R - Cutoff	Standard value	0 ~ 63	Not used(32)
W14	3200	Normal	G - Cutoff	Standard value	0 ~ 63	Not used(32)
W15	3200	Normal	B - Cutoff	Standard value	0 ~ 63	Not used(32)
W16	3200	Normal	R - Drive	Standard value	0 ~ 63	Not used(32)
W17	3200	Normal	G - Drive	Standard value	0 ~ 63	Not used(32)
W18	3200	Normal	B - Drive	Standard value	0 ~ 63	Not used(32)
W19		Under	R - Cutoff	Correction value	0 ~ 255	0
W20		Under	G - Cutoff	Correction value	0 ~ 255	0
W21		Under	B - Cutoff	Correction value	0 ~ 255	0
W22		Under	R - Drive	Correction value	0 ~ 255	0
W23		Under	G - Drive	Correction value	0 ~ 255	0
W24		Under	B - Drive	Correction value	0 ~ 255	0
W25		16 : 9	R - Cutoff	Correction value	0 ~ 255	0
W26		16 : 9	G - Cutoff	Correction value	0 ~ 255	0
W27		16 : 9	B - Cutoff	Correction value	0 ~ 255	0
W28		16 : 9	R - Drive	Correction value	0 ~ 255	0
W29		16 : 9	G - Drive	Correction value	0 ~ 255	0
W30		16 : 9	B - Drive	Correction value	0 ~ 255	0

■ DEFLECTION SYSTEM SETTINGS

No.	Scan	Input	V. frequency	Item	Variable range	Initial value
D01	Normal	Video	60Hz	V-Size →Standard value	0~63	38
D02	Normal	Video	60Hz	V-Shift →Standard value	0~63	32
D03	Normal	Video	60Hz	V-Linearity →Standard value	0~15	7
D04	Normal	Video	60Hz	S-Correction →Standard value	0~15	15
D05	Normal	Video	60Hz	H-Size →Standard value	0~63	26
D06	Normal	Video	60Hz	H-Shift →Standard value	0~63	32
D07	Normal	Video	60Hz	Pin-AMP →Standard value	0~63	41
D08	Normal	Video	50Hz/60Hz	HV-COMP-V →Standard value	0~7	7
D09	Normal	Video	50Hz/60Hz	HV-COMP-H →Standard value	0~7	0
D10	Normal	Video	50Hz	V-Size →Standard value	0~255	40
D11	Normal	Video	50Hz	V-Shift →Standard value	0~255	29
D12	Normal	Video	50Hz	V-Linearity →Standard value	0~255	8
D13	Normal	Video	50Hz	S-Correction →Standard value	0~255	15
D14	Normal	Video	50Hz	H-Size →Standard value	0~255	29
D15	Normal	Video	50Hz	H-Shift →Standard value	0~255	32
D16	Normal	Video	50Hz	Pin-AMP →Standard value	0~255	40
D17	Under	Video	50Hz/60Hz	V-Size →Correction value	0~255	230
D18	Under	Video	50Hz/60Hz	V-Shift →Correction value	0~255	0
D19	Under	Video	50Hz/60Hz	V-Linearity →Correction value	0~255	0
D20	Under	Video	50Hz/60Hz	S-Correction →Correction value	0~255	0
D21	Under	Video	50Hz/60Hz	H-Size →Correction value	0~255	0
D22	Under	Video	50Hz/60Hz	H-Shift →Correction value	0~255	0
D23	Under	Video	50Hz/60Hz	Pin-AMP →Correction value	0~255	2
D24	Under	Video	50Hz/60Hz	HV-COMP-V →Correction value	0~255	0
D25	Under	Video	50Hz/60Hz	HV-COMP-H →Correction value	0~255	0
D26	16 : 9	Video	50Hz/60Hz	V-Size →Correction value	0~255	0
D27	16 : 9	Video	50Hz/60Hz	V-Shift →Correction value	0~255	0
D28	16 : 9	Video	50Hz/60Hz	V-Linearity →Correction value	0~255	0
D29	16 : 9	Video	50Hz/60Hz	S-Correction →Correction value	0~255	0
D30	16 : 9	Video	50Hz/60Hz	H-Size →Correction value	0~255	0

No.	Scan	Input	V. frequency	Item	Variable range	Initial value
D31	16 : 9	Video	50Hz/60Hz	H-Shift →Correction value	0 ~ 255	0
D32	16 : 9	Video	50Hz/60Hz	Pin-AMP →Correction value	0 ~ 255	0
D33		RGB	60Hz	V-Shift →Correction value	0 ~ 255	0
D34		RGB	60Hz	H-Shift →Correction value	0 ~ 255	0
D35		RGB	50Hz	V-Shift →Correction value	0 ~ 255	0
D36		RGB	50Hz	H-Shift →Correction value	0 ~ 255	0
D37	Pulse Cross		50Hz/60Hz	V-Shift →Correction value	0 ~ 255	0
D38	Pulse Cross		50Hz/60Hz	H-Shift →Correction value	0 ~ 255	0
D39	External SYNC		50Hz/60Hz	V-Shift →Correction value	0 ~ 255	0
D40	External SYNC		50Hz/60Hz	H-Shift →Correction value	0 ~ 255	0
D41	TILT		50Hz/60Hz	TILT →Fixed value	0 ~ 255	16
D42	U/L Cornner Pin		50Hz/60Hz	U/L CORNER PIN →Fixed value	0 ~ 255	255
D43	V-BOW/V-ANGLE		50Hz/60Hz	V-BOW/V-ANGLE →Fixed value	0 ~ 255	136

■ Control system setting

No.	Item	Variable range	Initial value	Remarks
C01	MENU select. Default	0 ~ 255	1	MENU (COLOR TEMPERATURE, SETUP LEVEL) 1. EUROPE 2. JAPAN 3. US
C02	Menu display time	0 ~ 255	0	Menu display time 0: extinguish after 5 minutes, 1: continuous
C03	OSDC Color	0 ~ 255	7	On-screen color setting, power off/on needed after changing (see table next page)
C04	OSDC H.Position	0 ~ 255	5	On-screen H. position 0 - 15
C05	OSDC V.Position (60Hz)	0 ~ 255	1	On-screen V. position (60 Hz) 0 - 15
C06	OSDC V.Position (50Hz)	0 ~ 255	2	On-screen V. position (50 Hz) 0 - 15
C07	Bright Data to MAX	0 ~ 255	20	Effective brightness range from center detent to maximum
C08	Bright Data to MIN	0 ~ 255	20	Effective brightness range from center detent to minimum

No.	Item	Variable range	Initial value	Remarks
C09	Chroma Data to MAX	0~255	30	Effective chroma range from center detent to maximum
C10	Chroma Data to MIN	0~255	50	Effective chroma range from center detent to minimum
C11	Contrast Data to MAX	0~255	20	Effective contrast range from center detent to maximum
C12	Contrast Data to MIN	0~255	20	Effective contrast range from center detent to minimum
C13	Phase Data to MAX	0~255	30	Effective phase range from center detent to maximum
C14	Phase Data to MIN	0~255	30	Effective phase range from center detent to minimum
C15	Signal	0~255	10	Signal Status display check time
C16	System detect	0~255	0	0: automatic, 1: 3.58 MHz, 2: 4.43 MHz

No.	On-screen color setting data	No.	On-screen color setting data
129	Blue	0	Black (darkens during blue check)
130	Green	1	Black (brightens during blue check)
131	Aqua	2	Green (darkens during blue check)
132	Red	3	Green (brightens during blue check)
133	Magenta	4	Red (darkens during blue check)
134	Yellow	5	Red (brightens during blue check)
135	White	6	Orange (darkens during blue check)
136	Black	7	Orange (brightens during blue check)

SET-UP MENU ENTRY

- If the separately sold remote controller (RM-C550W) is available, this can be used for adjustments. Normally, perform adjustments using the set front control panel.
1. While holding ENTER depressed, press MENU.
 2. The SET-UP MENU is displayed on the screen.

ITEM SELECTION

■ SIZE/CENTERING, WHITE BALANCE ADJUST, REMOTE SELECT

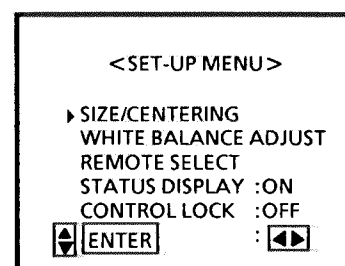
- SIZE / CENTERING items are displayed only when RGB input is selected.
1. Press the up [↑] or down arrow [↓] to select SIZE / CENTERING items.
 2. After selecting the item, press ENTER.
 3. The adjustment mode menu is displayed.
 4. Again press ENTER to display the adjustment mode sub-menu for each adjustment item (select adjustment item with up [↑] or down arrow [↓]).
 5. Press MENU to display the original adjustment mode menu.
 6. Perform in the same manner for White balance adjust and Remote select.

■ STATUS DISPLAY

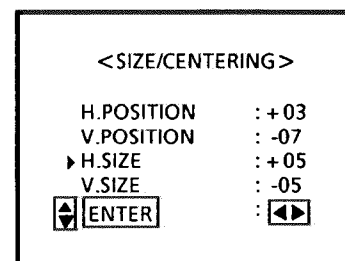
1. Press the up [↑] or down arrow [↓] to select the status display items.
2. Press the left [←] or right arrow [→] to select on/off.

■ CONTROL LOCK

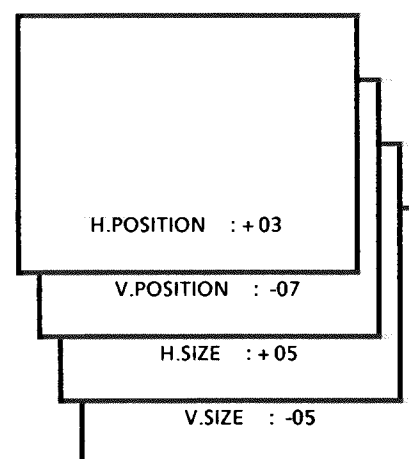
- Except for sound volume, all control operations are inhibited from the front control buttons, Phase, Chroma, Bright and Contrast controls, and the remote controller (sound volume remains operational).
1. Press the up [↑] or down arrow [↓] to select Control Lock.
 2. Press the left [←] or right arrow [→] to select on/off.
 3. The status just prior to selecting On is held and after exiting the SET-UP MAIN MENU, control adjustment is inhibited.
 4. To release the CONTROL LOCK, press ENTER and MENU to display the set-up main menu, then set CONTROL LOCK to off.



SET-UP MAIN MENU



ADJUSTMENT MODE MENU



ADJUSTMENT MODE SUB-MENU

H.SIZE→V.SIZE→H.POSITION→V.POSITION

SETTING VALUE CHANGE

- Set for displaying the adjustment mode menu or the adjustment mode sub-menu.
1. Press the right arrow [→] to change the adjustment value in the + direction.
 2. Press the left arrow [←] to change the adjustment value in the - direction.
 3. Press the up [↑] or down arrow [↓] to change the adjustment item.
 4. Press MENU to return the SET-UP MAIN MENU. (At the adjustment mode sub-menu, again press MENU.)

SET-UP MENU EXIT

1. When settings are complete, press MENU.
2. The screen display extinguishes and the SET-UP MENU is exited.

SET-UP MENU CHECKS

■ WHITE BALANCE

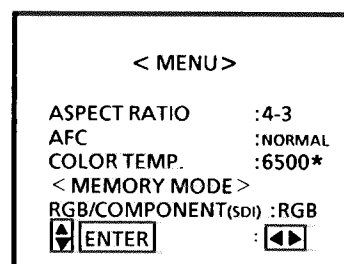
To check if adjustment has changed:

1. Press MENU to display the user main menu.
2. If an asterisk (*) appears at the Color Temp. item, the setting has been changed.

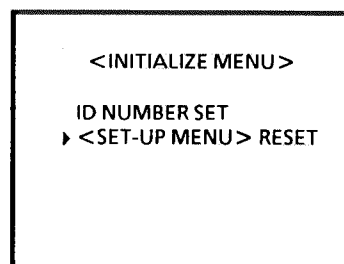
■ SET-UP MENU INITIALIZE

To return changed SIZE/CENTERING and WHITE BALANCE Adjust to original status (initialize);

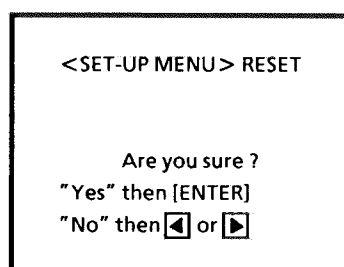
1. Hold the mainframe down arrow [↓] and MENU depressed, and set power on (inoperable from remote controller).
2. The initialize menu is displayed (hold depressed until menu appears).
3. Select SET-UP MENU RESET and press ENTER.
4. The SET-UP RESET MENU is displayed.
5. Press ENTER to return the standard settings. Note that Remote Elect, Status Display and CONTROL LOCK are initialized and ID No. is cleared to 0.



USER MAIN MENU



INITIALIZE MENU



SET-UP RESET MENU

MEMORY IC REPLACEMENT NOTES

This model uses non-volatile memory ICs. When these are replaced, the data must be reset.

Video and deflection system data are stored in MEMORY IC. If this is replaced without entering the data, a normal picture will not be obtained. When replacing, be sure to use an IC containing the (initial value) data.

■ SET-UP MENU RECORD

Press MENU and at the menu display, check if an asterisk (*) appears after Color Temp. If the asterisk appears, the user has set the values according to personal preference. To the extent possible, make a memo of the setting values before replacing the IC.

■ IC REPLACEMENT STEPS

1. To the extent possible, make a memo of the SET-UP MENU and adjustment mode menu contents.
2. Switch off the power and disconnect the power cord from the outlet.
3. Replace the MEMORY IC.
4. Reconnect the power cord to the outlet and switch power on.
5. Refer to the memo and enter the setting values.
6. Perform adjustments according to the adjustment items.

SERVICE ADJUSTMENTS

PRIOR TO STARTING ADJUSTMENT

1. Supply power to the set and measuring instruments and allow to warm up for at least 30 minutes.
2. Confirm the proper AC power voltage is being supplied.
3. Use care not to disturb controls and switches not mentioned in the adjustment items.
4. Refer to adjustment settings and set user operated controls (BRIGHT, CONTRAST, PHASE, CHROMA, etc.) to the indicated positions.

TOOLS AND FIXTURES FOR ADJUSTMENT

- DC voltmeter (digital voltmeter)
- Oscilloscope
- Signal generator (PAL/NTSC systems)
 - Color bar and split color bar patterns
 - Crosshatch pattern
 - Cross pattern
 - Red raster pattern
 - Green raster pattern
 - Blue raster pattern
 - Philips pattern (including R-Y and B-Y) Desirable
 - TV resolution pattern Desirable
- Remote control unit (RM-C550W) Adjustments easier if available
- Color analyzer Desirable
- High voltage meter Desirable

ADJUSTMENT SETTINGS

1. Front controls

PHASE	Detent
CHROMA	Detent
BRIGHT	Detent
CONTRAST	Detent
VOLUME	MIN

2. Front switches

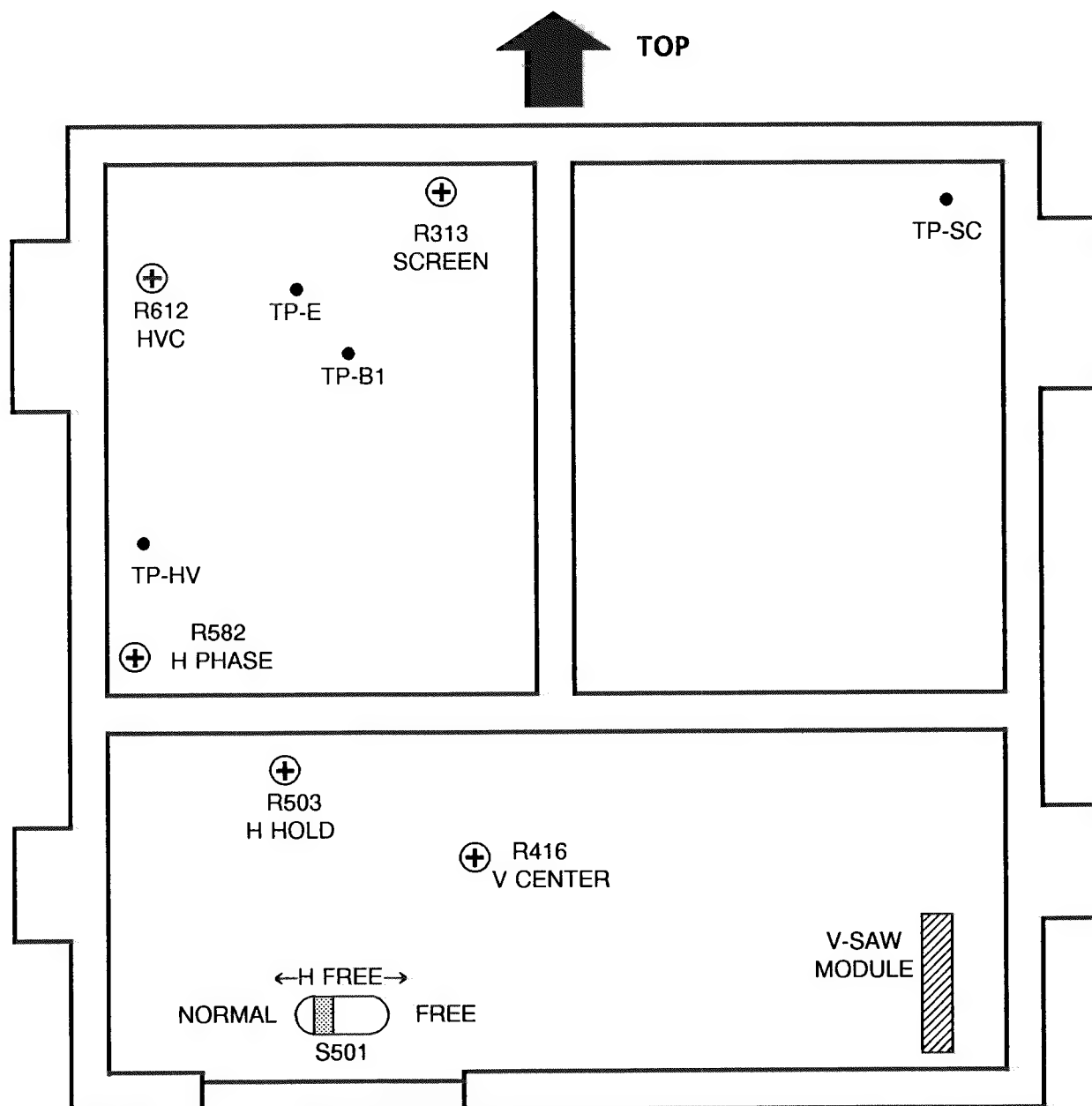
INPUT SELECT	VIDEO A	
EXT SYNC	INT	Switched not depressed
UNDER SCAN	OVER	“
PULSE CROSS	OFF	“
COLOR OFF	COLOR	“
BLUE CHECK	OFF	“
MEMORY MODE	OFF	“

3. Menu screen

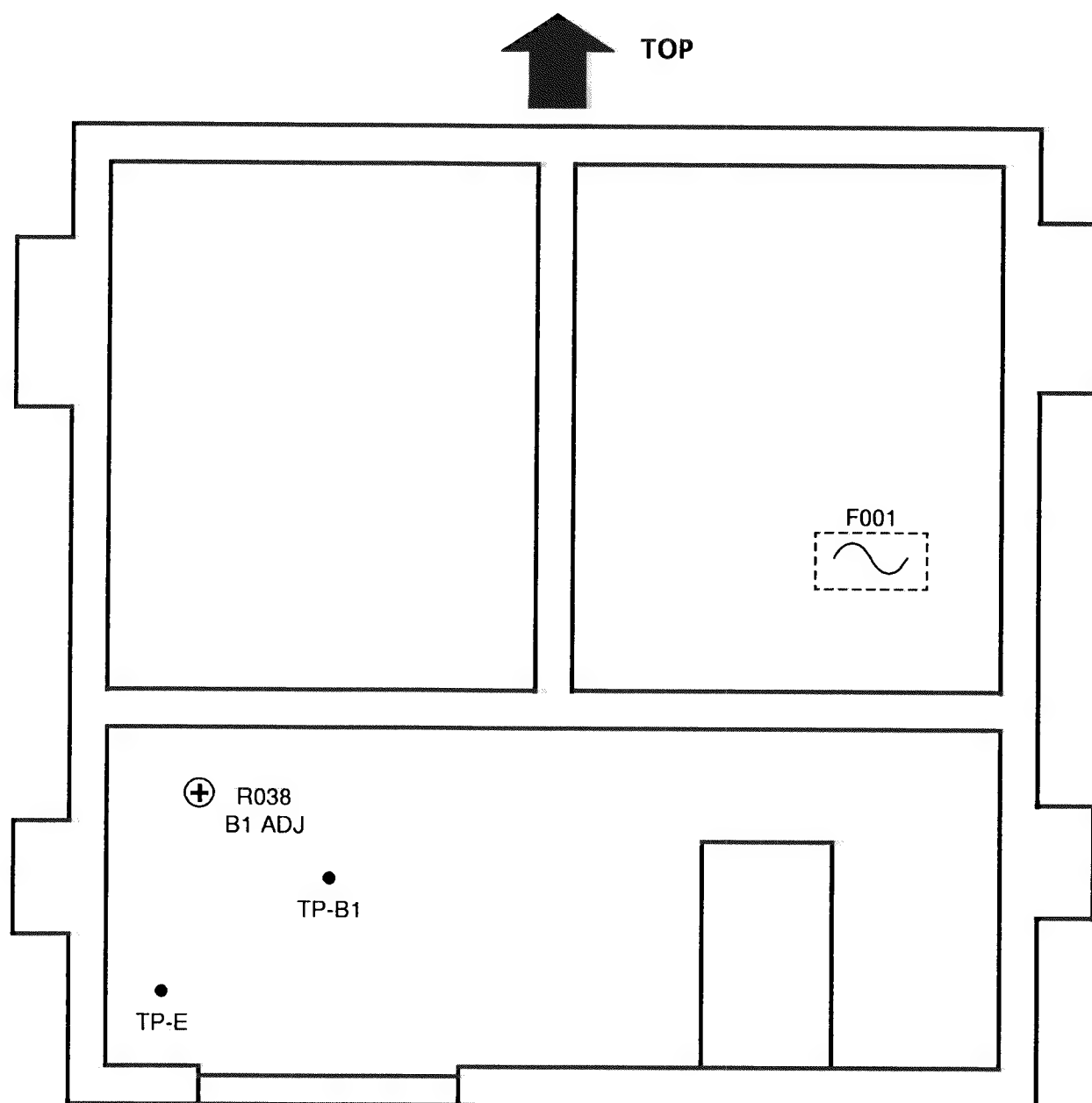
ASPECT RATIO	4 - 3
FILTER SELECT	COMB
PEAKING FREQ.	2.6MHz
PEAKING LEVEL	0dB
AFC	NORMAL
COLOR TEMP.	<u>9300</u>
NTSC SETUP	0
COMPO. LEVEL	SMPTE
RGB/COMPONENT	RGB

ADJUSTMENT LOCATIONS

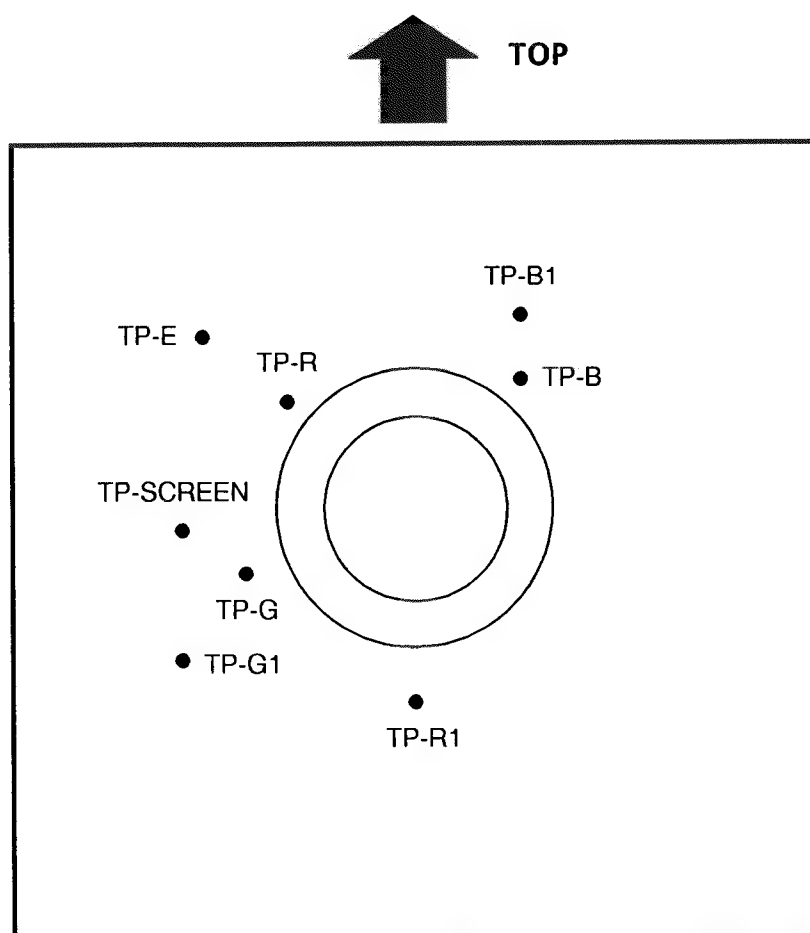
■ DEFLECTION PWB (pattern side)



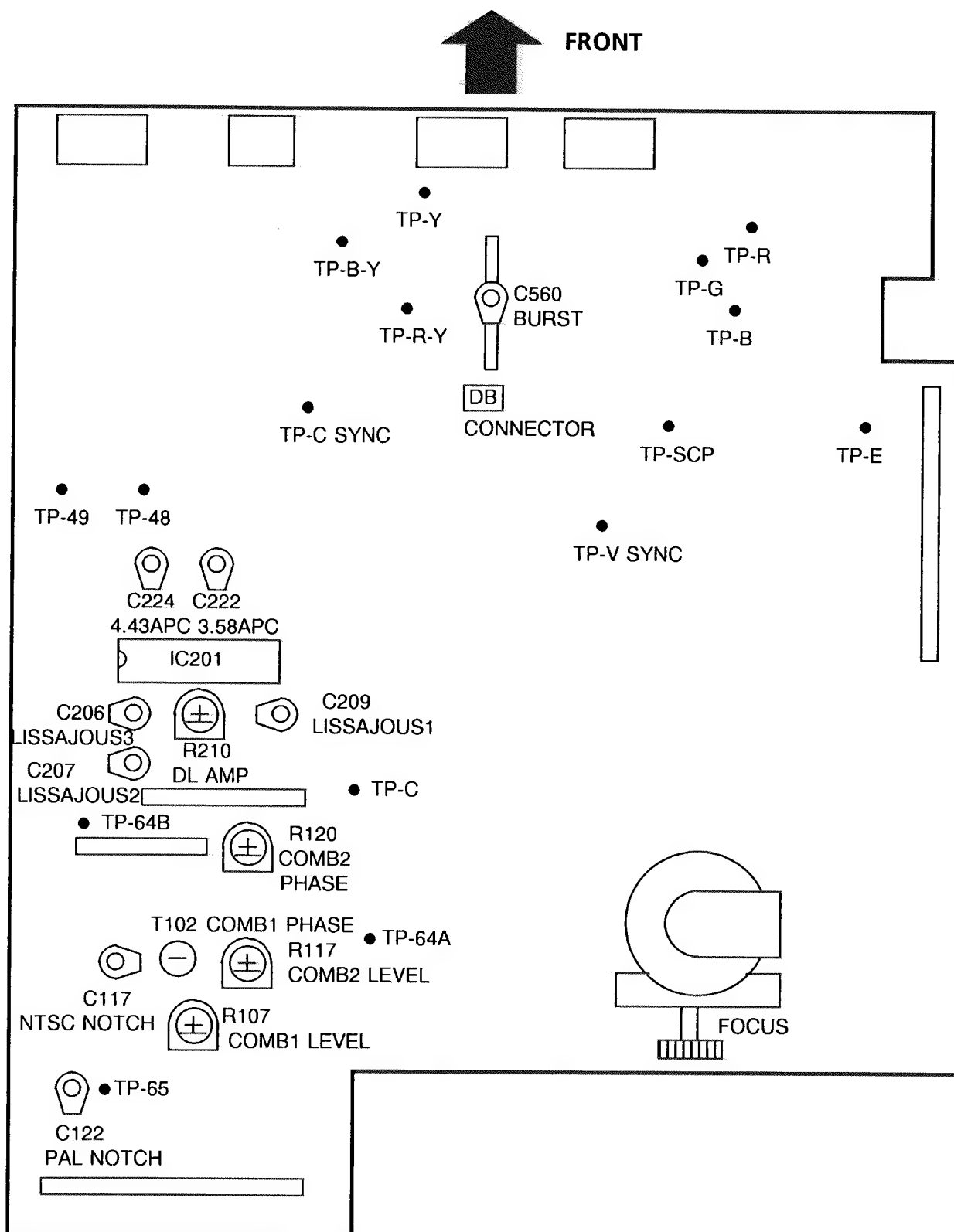
■ POWER PWB (pattern side)



■ CRT SOCKET PWB (pattern side)




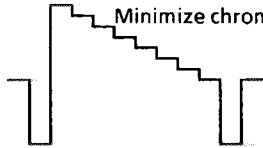
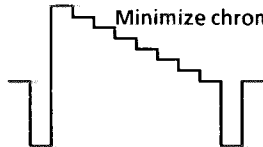
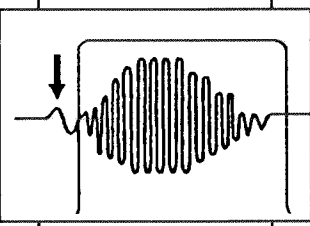
■ SIGNAL PWB (parts side)

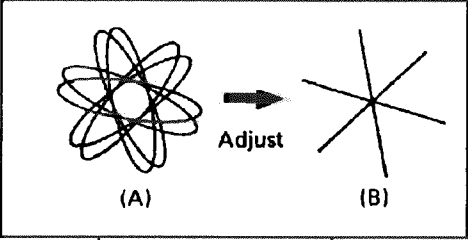
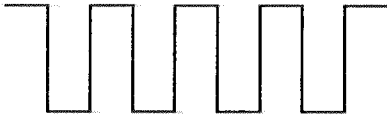


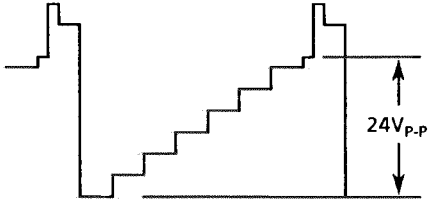
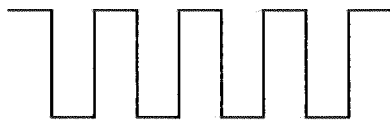
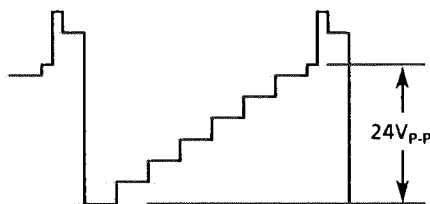
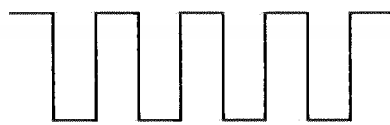
ADJUSTING STEP

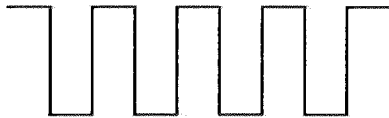
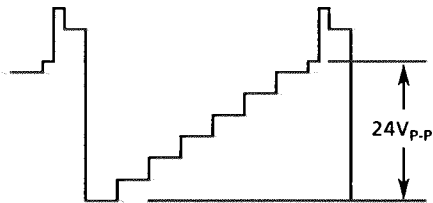
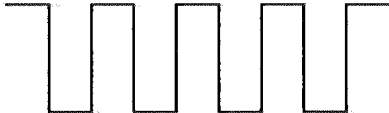
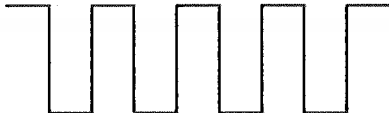
Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
B1 voltage check	Voltmeter Variable transformer	TP-B1 TP-E [POWER PWB]	R038 (B1 adj) [POWER PWB]	<ol style="list-style-type: none"> 1. Set power supply voltage to 198 V. 2. Set CONTRAST and BRIGHT to minimum and produce a black screen. 3. Connect voltmeter between TP-B1 and TP-E. Switch on power. 4. Adjust R038 (B1 adj) to set the B1 voltage to 54.0 ± 0.1 V. 5. Set the power supply voltage to 264 V. 6. Check for B1 voltage of 54.0 ± 0.2 V. 7. Return the CONTRAST and BRIGHT controls to the detent positions.
High voltage check	High voltage meter Signal generator (All-black signal)			<ol style="list-style-type: none"> 1. Set the Ext Sync switch to Ext. 2. Connect a synchronization signal to Ext Sync. 3. When the raster appears, reduce the BRIGHT control. 4. Connect the high voltage meter to the anode and check for 22.5 - 23.5 KV. 5. Return the Ext Sync switch to Int.
V.deflection center	Signal generator (Resolution pattern)		D02(NTSC V SHIFT) [SERVICE MENU] R416(V CENTER) [DEFLECTION PWB]	<ul style="list-style-type: none"> • Perform after purity adjustment. • Adjust deflection yoke inclination. <ol style="list-style-type: none"> 1. At SERVICE MENU, set D02 to 32. 2. Adjust R416 (V CENTER) to align the picture center with the CRT center.
Screen	Oscilloscope Signal generator (Color bar)	TP-SC	R313 (SCREEN) [DEFLECTION PWB]	<ol style="list-style-type: none"> 1. Connect oscilloscope to TP-SC. 2. Adjust R313 (Screen) to set the screen voltage to 450 ± 10 V.
Focus	Signal generator (Resolution pattern)		FOCUS VR [HVT]	<ol style="list-style-type: none"> 1. Adjust the Focus VR for optimum focus where moire is not apparent. 2. Darken the picture and and adjust the focus by turning counter-clockwise from the position where focus is poor. 3. Alternately repeat the above steps to obtain the optimum position. <ul style="list-style-type: none"> • Focus can be adjusted easily by displaying the menu.
H frequency	Signal generator (Resolution pattern)		D06(H SHIFT) [SERVICE MENU] S501 (H FREE SW) R503(H HOLD) [DEFLECTION PWB]	<ol style="list-style-type: none"> 1. At the SERVICE MENU, set D06 to 32. 2. Set S501 (H Free SW) to Free. 3. Adjust screen sync with R503 (H Hold). 4. Set S501 (H Free SW) to Normal. 5. Change the signal, then return the previous signal. Confirm absence of sync disturbance.
H center (NTSC)	Signal generator (Resolution pattern)		D06(H SHIFT) [SERVICE MENU] R582(H PHASE) [DEFLECTION PWB]	<ol style="list-style-type: none"> 1. At the SERVICE MENU, set D06 to 32. 2. Adjust R582 (H Phase) to align the picture center with the CRT center.

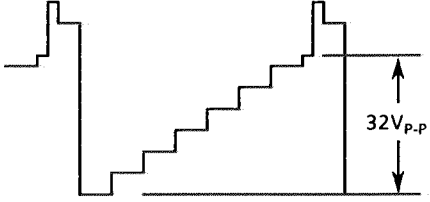
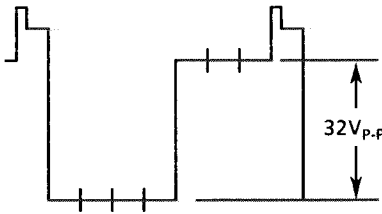
Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
HVC	Voltmeter Signal generator (All-black signal)	TP-HV	R612(HVC) [DEFLECTION PWB]	<ol style="list-style-type: none"> 1. Set Ext Sync to Ext and supply a horizontal sync signal input. 2. When the raster appears, reduce the BRIGHT control. 3. Connect the voltmeter to TP-HV. 4. Adjust R612 (HVC) for 2.0 ± 0.1 V.
H gain (NTSC)	Signal generator (Resolution or crosshatch pattern)		D05(H SIZE) D21(H SIZE) D22(H SHIFT) [SERVICE MENU]	<ol style="list-style-type: none"> 1. At the SERVICE MENU, set D05 to adjust the horizontal size to 95 %. 2. Set the Scan Size to Under. 3. Set D21 to 00. 4. Set D22 to 00. 5. Return the Scan Size to normal.
H center H gain (PAL)	Signal generator (Resolution or crosshatch pattern)		D15(H SHIFT) D14(H SIZE) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Adjust D15 to align the picture center with the CRT center. 2. Adjust D14 to set the horizontal size to 95 %.
V gain, V center, V linearity (NTSC)	Signal generator (Resolution pattern)		D03(V LINEARITY) D01(V SIZE) D17(V SIZE) D19(V LINEARITY) D18(V SHIFT) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Check that the horizontal line of the video signal center is at the CRT center (if shifted, adjust R416). 2. Adjust the picture vertical linearity (scan ratio) with D03. 3. Adjust the screen top and bottom edges to 95 % with D01. 4. Set the Scan Size to Under. 5. Set D17 to 230. 6. Set D19 to 00. 7. Set D18 to 00. 8. Return the Scan Size to normal.
V gain, V center, V linearity (PAL)	Signal generator (Resolution pattern)		D11(V SHIFT) D12(V LINEARITY) D10(V SIZE) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Adjust D11 to align the video signal center with the CRT center. 2. Adjust the picture vertical linearity (scan ratio) with D12. 3. Adjust the screen top and bottom edges to 95 % with D10.
Side pincushion (NTSC/PAL)	Signal generator (Crosshatch NTSC/PAL)		D07(PIN AMP) D23(PIN AMP) D16(PIN AMP) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Adjust side pincushion with D07 so that A = B. 2. Set the Scan Size to Under. 3. Adjust side pincushion with D23 so that A = B. 4. Supply a PAL crosshatch input. 5. Return the Scan Size to normal. 6. Adjust side pincushion with D16 so that A = B. <div data-bbox="1002 1780 1348 2056" data-label="Image"> </div>

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
Comb filter (NTSC)	Oscilloscope Signal generator (Color bar)	TP-64A TP-64B	R107 (COMB1 LEVEL) T102 (COMB1 PHASE) R117 (COMB2 LEVEL) R120 (COMB2 PHASE) [SIGNAL PWB]	<ol style="list-style-type: none"> Set the menu Filter Select to Comb. Connect oscilloscope to TP-64A. Alternately adjust R107 and T102 to minimize the chroma component.  <ol style="list-style-type: none"> Connect oscilloscope to TP-64B. Alternately adjust R117 and R120 to minimize the chroma component. 
Notch filter	Oscilloscope Signal generator (Color bar NTSC / PAL)	TP-65 TP-C IC201-14pin	C117 (NTSC NOTCH) C122 (PAL NOTCH) C560 (BURST) [SIGNAL PWB]	<ol style="list-style-type: none"> Set the menu Filter Select to Notch. Connect oscilloscope to TP-65. Adjust C117 to minimize the chroma component. Supply a PAL color bar input. Adjust C122 to minimize the chroma component.  <ol style="list-style-type: none"> Supply a NTSC color bar input. Connect oscilloscope (ch-1) to TP-C and to IC201-14pin (ch-2), so both waves are able to see at the same time. Adjust the C560 so that the ascending curve of the burst gate pulse intersects the burst signal at the point after the arrow-marked place as shown in figure. 
Color sync (NTSC)	Signal generator (Color bar) 10 K Ω resistor Shorting fixture		C222(3.58APC) [SIGNAL PWB]	<ol style="list-style-type: none"> Connect a 10 KΩ resistor between IC201 pin 13 and +B (12 V). Connect a shorting fixture between IC201 pin 14 and ground. Adjust to synchronize the color bar with C222. Remove the resistor and shorting fixture. Change the input signal, then return the color bar. Confirm absence of sync disturbance.

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
APC (PAL)	Oscilloscope Signal generator (Color bar, split color bar) 10 K Ω resistor Shorting fixture	TP-48 TP-49	C224 (4.43APC) R210 (DL AMP) C206 (LISSAJOUS 3) C207 (LISSAJOUS 2) C208 (LISSAJOUS 1) [SIGNAL PWB]	<ol style="list-style-type: none"> 1. Connect a 10 KΩ resistor between IC201 pin 13 and +B (12 V). 2. Connect a shorting fixture between IC201 pin 14 and ground. 3. Connect a 5.6 KΩ resistor IC201 pin 8 and ground. 4. Adjust to synchronize the color bar with C224. 5. Connect an oscilloscope to TP-48 and TP-49 and display X-Y coordinates. 6. Adjust R210 and C206 to obtain the waveform indicated in the figure. If inadequate, adjust C207 and C209. 7. Supply a PAL split color bar input and adjust C224 to minimize coloration in the R-Y and B-Y components.
<div style="text-align: center;">  </div>				
Chroma and phase (Video input, NTSC)	Oscilloscope Signal generator (Color bar)	TP-B [CRT SOCKET PWB]	S02(CHROMA) S03(PHASE) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply an NTSC color bar to Video A. 2. Set the menu Filter Select to Notch. 3. Connect oscilloscope to TP-B. 4. Alternately adjust S02 and S03 to obtain a straight line waveform. 5. Set Filter Select to Comb. <div style="text-align: center;">  </div>

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
Contrast (Video input, NTSC)	Oscilloscope Signal generator (Color bar)	TP-G [CRT SOCKET PWB]	S04 (CONTRAST) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply an NTSC color bar input to Video A. 2. Set the Color Off switch to off. 3. Connect oscilloscope to TP-G. 4. Adjust the waveform level to 24 Vp-p with S04. 5. Set the Color Off switch to Color. 
Chroma (Video input, PAL)	Oscilloscope Signal generator (Color bar)	TP-B [CRT SOCKET PWB]	S05 (CHROMA) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply an PAL color bar input to Video A. 2. Connect oscilloscope to TP-B. 3. Adjust S05 to obtain a straight line waveform. 
Contrast (Video input, PAL)	Oscilloscope Signal generator (Color bar)	TP-G [CRT SOCKET PWB]	S06 (CONTRAST) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply an PAL color bar input to Video A. 2. Set the Color Off switch to off. 3. Connect oscilloscope to TP-G. 4. Adjust the waveform level to 24 Vp-p with S06. 5. Set the Color Off switch to Color. 
Phase (Video input, NTSC 4.43)	Oscilloscope Signal generator (Color bar NTSC 4.43)	TP-B [CRT SOCKET PWB]	S07 (PHASE) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply an NTSC 4.43 color bar input to Video A. 2. Connect oscilloscope to TP-B. 3. Adjust S07 to obtain a straight line waveform. 

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
Chroma and phase (Y/C input, NTSC)	Oscilloscope Signal generator (Color bar)	TP-B [CRT SOCKET PWB]	S08 (CHROMA) S09(PHASE) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply an NTSC color bar input to Y/C In. 2. Connect oscilloscope to TP-B. 3. Alternately adjust S08 and S09 to obtain a straight line waveform. 4. Set Filter Select to Comb. 
Contrast (Y/C input, NTSC)	Oscilloscope Signal generator (Color bar)	TP-G [CRT SOCKET PWB]	S10 (CONTRAST) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply an NTSC color bar input to Y/C in. 2. Set the Color Off switch to off. 3. Connect oscilloscope to TP-G. 4. Adjust the waveform level to 24 Vp-p with S10. 5. Set the Color Off switch to Color. 
Chroma (Y/C input, PAL)	Oscilloscope Signal generator (Color bar)	TP-B [CRT SOCKET PWB]	S11 (CHROMA) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply a PAL color bar input to Y/C in. 2. Connect oscilloscope to TP-B. 3. Adjust S11 to obtain a straight line waveform. 
Chroma (Component input, NTSC)	Oscilloscope Signal generator (Color bar)	TP-B [CRT socket PWB]	S12 (CHROMA) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Set the menu RGB/Component to Component. 2. Supply an NTSC color bar input to Component In. 3. Connect oscilloscope to TP-B. 4. Adjust S12 to obtain a straight line waveform. 5. Return the menu RGB/Component to original setting. 


Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
Contrast (Component input, NTSC)	Oscilloscope Signal generator (Color bar)	TP-G [CRT SOCKET PWB]	S13 (CONTRAST) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Set the menu RGB/Component to Component. 2. Supply an NTSC color bar input to Component In. 3. Set the Color Off switch to off. 4. Connect oscilloscope to TP-G. 5. Adjust the waveform level to 32 Vp-p with S13. 6. Set the Color Off switch to Color. 7. Return the menu RGB/Component to original setting. 
Contrast (RGB input, NTSC)	Oscilloscope Signal generator (Color bar)	TP-G [CRT SOCKET PWB]	S14 (CONTRAST) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply an NTSC color bar input to RGB In. 2. Connect oscilloscope to TP-G. 3. Adjust the waveform level to 32 Vp-p with S14. 
Color temperature (9300 K)	Signal generator (Resolution pattern, color bar) Color analyzer or color temperature meter		W01 (R CUTOFF) W02 (G CUTOFF) W03 (B CUTOFF) W04(R DRIVE) W05(G DRIVE) W06(B DRIVE) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply a resolution pattern input. 2. Check that the menu Color Temp. is 9300. 3. Set the Color Off switch to off. 4. Set W01 to 26, W03 to 16, W05 to 32, and W02 to 25. 5. Adjust W04 and W06 for the specified color temperature (reference: W04 = 31, W06 = 29) (X = 0.283, Y = 0.297) 6. Supply a color bar input (black and white). 7. Check for proper white balance tracking. If deviated in the dark components, adjust with W01 and W03. <ul style="list-style-type: none"> • Adjustment with color temperature meter: Apply the sensor to the CRT, adjust and measure. If deviated, repeatedly adjust and measure to obtain the specified color temperature.

Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
Color temperature (6500 K)	Signal generator (Resolution pattern, color bar) Color analyzer or color temperature meter		W07 (R CUTOFF) W08 (G CUTOFF) W09 (B CUTOFF) W10 (R DRIVE) W11 (G DRIVE) W12 (B DRIVE) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Supply a resolution pattern input. 2. Set the menu Color Temp. to 6500. 3. Set the Color Off switch to off. 4. Set W07 to 37, W09 to 08, and W08 to 25. 5. Set W11 to 32. 6. Adjust W10 and W12 for the specified color temperature (reference: W10 = 33, W12 = 23) (X = 0.313, Y = 0.329) 7. Supply a color bar input (black and white). 8. Check for proper white balance tracking. If deviated in the dark components, adjust with W07 and W09. 9. Return the menu Color Temp. to original setting. <ul style="list-style-type: none"> • Adjustment with color temperature meter: Apply the sensor to the CRT, adjust and measure. If deviated, repeatedly adjust and measure to obtain the specified color temperature.
Bright	Signal generator (Split color bar)		S01 (BRIGHT) [SERVICE MENU]	<ol style="list-style-type: none"> 1. Adjust S01 to where the split color 0 % black component faintly brightens (as -1% black component not brightens). 2. Supply another signal and confirm absence of black deviation.

BM-1400PN-A_(A) STANDARD CIRCUIT DIAGRAM

NOTE ON USING CIRCUIT DIAGRAMS

1. SAFETY

The components identified by the  symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2. SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

- (1) Input signal : PAL Colour bar signal
 - (2) Setting positions of each knob/button and variable resistor : Original setting position when shipped
 - (3) Internal resistance of tester : DC 20k Ω /V
 - (4) Oscilloscope sweeping time : H \Rightarrow 20 μ S/div
: V \Rightarrow 5mS/div
: Others \Rightarrow Sweeping time is specified
 - (5) Voltage values : All DC voltage values
- * Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3. INDICATION OF PARTS SYMBOL [EXAMPLE]

- In the PW board : R1209 \rightarrow R209

4. INDICATIONS ON THE CIRCUIT DIAGRAM

(1) Resistors

• Resistance value

- No unit : [Ω]
- K : [K Ω]
- M : [M Ω]

• Rated allowable power

- No indication : 1/6[W]
- Others : As specified

• Type

- No indication : Carbon resistor
- OMR : Oxide metal film resistor
- MFR : Metal film resistor
- MPR : Metal plate resistor
- UNFR : Uninflamable resistor
- FR : Fusible resistor

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2) Capacitors

• Capacitance value

- 1 or higher : [pF]
- less than 1 : [μ F]

• Withstand voltage

- No indication : DC50[V]
- Others : DC withstand voltage[V]
- AC indicated : AC withstand voltage[V]

* Electrolytic Capacitors

47/50[Example]: Capacitance value [μ F]/withstand voltage[V]




• Type

- No indication : Ceramic capacitor
- MY : Mylar capacitor
- MM : Metalized mylar capacitor
- PP : Polypropylene capacitor
- MPP : Metalized polypropylene capacitor
- MF : Metalized film capacitor
- TF : Thin film capacitor
- BP : Bipolar electrolytic capacitor
- TAN : Tantalum capacitor

(3) Coils



- No unit : [μ H]
- Others : As specified

(4) Power Supply



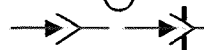
-  : B1
-  : B2(12V)
-  : 5V

* Respective voltage values are indicated.





(5) Test Point

-  : Test point
-  : Only test point display



(6) Connecting method

-  : Connector
-  : Wrapping or soldering
-  : Receptacle

(7) Ground symbol

-  : LIVE side ground
-  : ISOLATED(NEUTRAL) side ground
-  : EARTH ground
-  : DIGITAL ground

5. NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : () side GND and the ISOLATED(NEUTRAL) : () side GND. Therefore, care must be taken for the following points.

- (1) Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.
- (2) Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

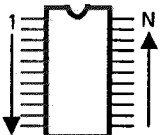
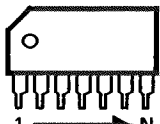
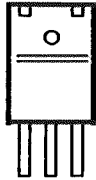
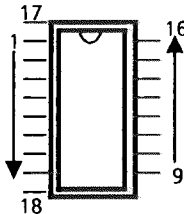
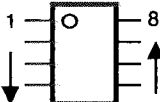
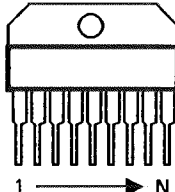
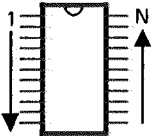
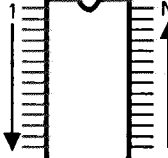
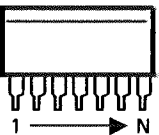
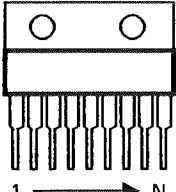
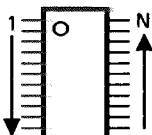
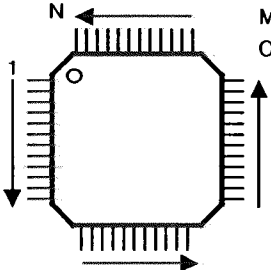
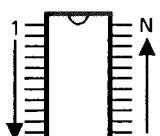
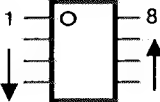
◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

CONTENTS



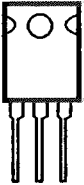
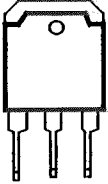
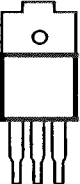
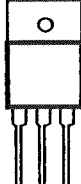
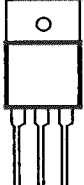

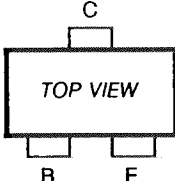
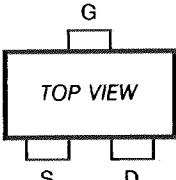
■ SEMICONDUCTOR SHAPES	2-3
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4. MICOM PWB (FX-5018A)	
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6. DEFLECTION PWB (FX-2046A)	
7. CRT SOCKET PWB (FX-3028A)	

SEMICONDUCTOR SHAPES

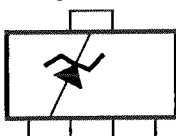
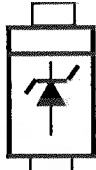
IC

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 <p>HA11423</p>	 <p>NJM4560D μPC358 ST24BM-1400</p>	 <p>μPC1498H</p>
 <p>FA5301P</p>	 <p>TDA4680 TDA4670 AN5625N</p>	 <p>μPC358HA</p>
 <p>AN5265</p>	 <p>MB90077PF-109</p>	<p>(Flat package IC)</p>  <p>MB89647PF-113 CXD2018Q</p>
<p>(Flat package IC)</p>  <p>HD74HC32FP HD74HC158FP</p>	<p>(Flat package IC)</p>  <p>μPC4558G-W</p>	

●TRANSISTOR

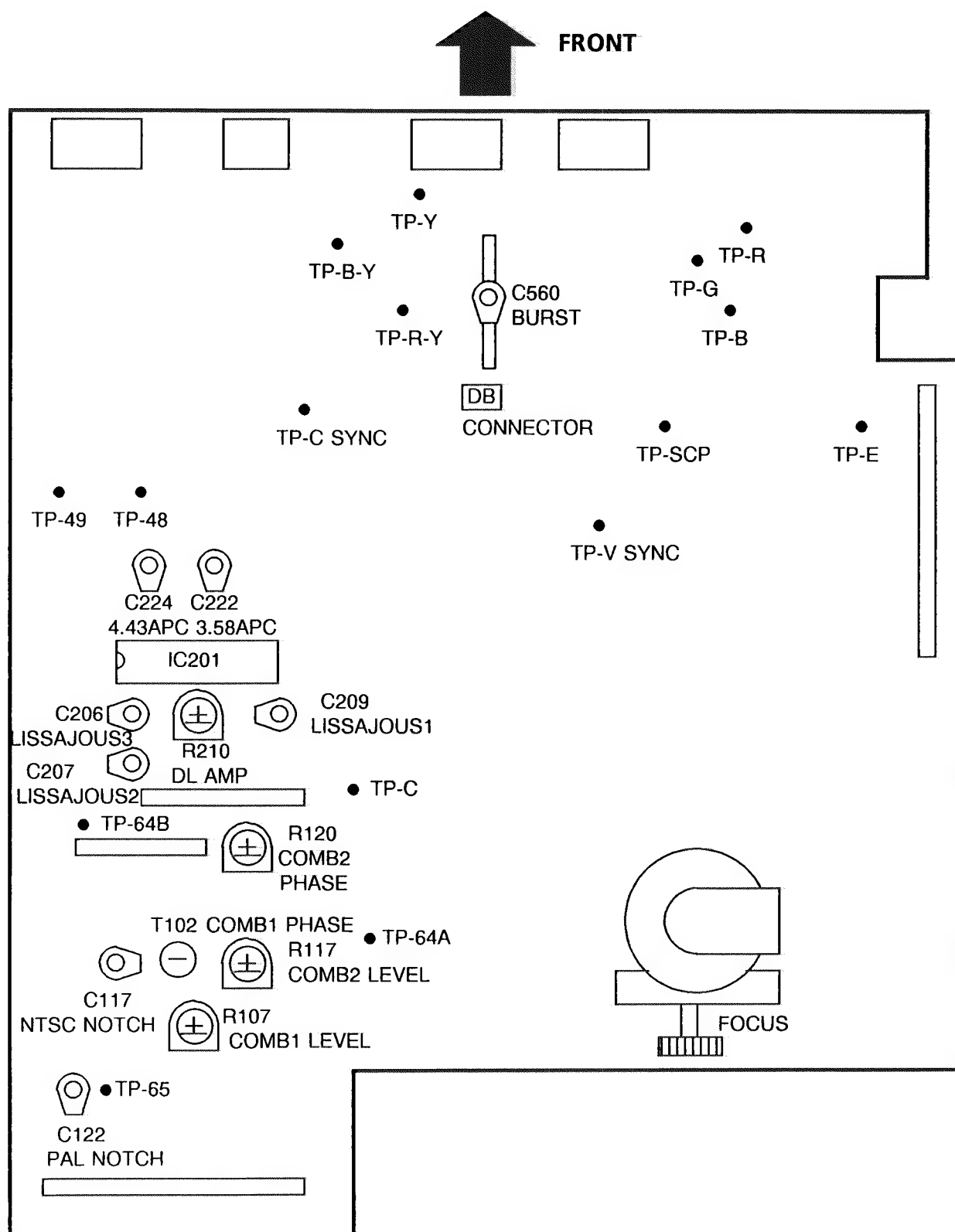
 <p>[Bottom View]</p> <p>2SC1740S(R) 2SC3311A(Q)-T</p>	 <p>[Bottom View]</p> <p>2SC3334 2SA1321 2SC1472K 2SA1370(E) 2SA562TM 2SC3187-T 2SC1959(Y) 2SA1309 2SC1815(YG)-T</p>	 <p>2SC4632</p>
 <p>2SC4589-C1</p>	 <p>2SD1408 2SD1409</p>	 <p>2SK1118</p>
 <p>2SC4544</p>	 <p>2SC4502</p>	<p>(CHIP TRANSISTOR)</p>  <p>2SC2712(YG) 2SA1162(YG)</p>
<p>(CHIP FET)</p>  <p>2SK374(Q)</p>		

●DIODE

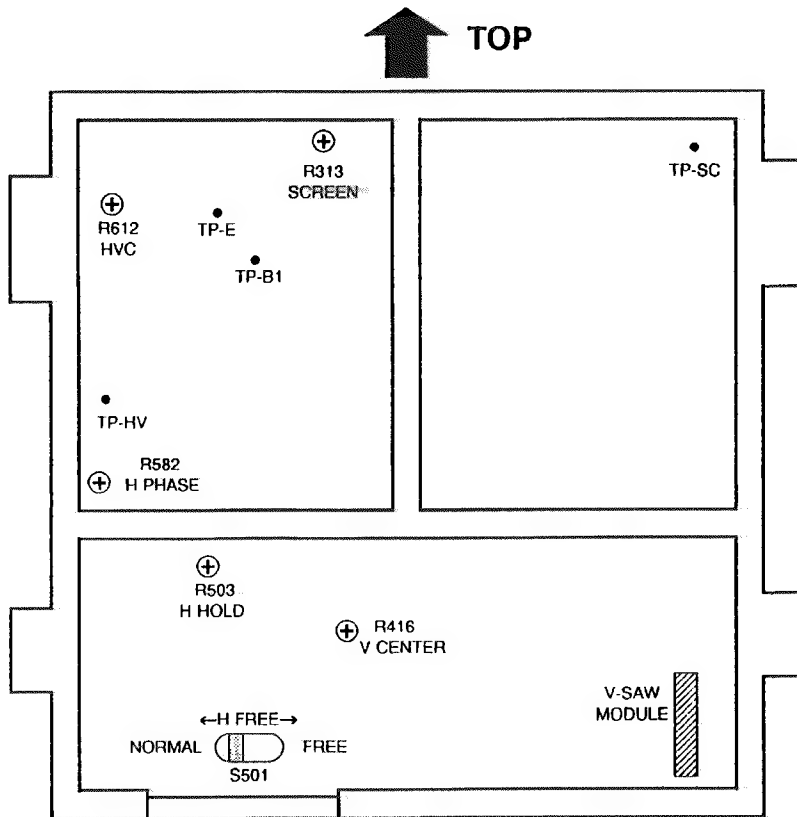
<p>(CHIP DIODE)</p>  <p>MA3056(L)-W MA3150(M)-W MA151K-W</p>	<p>(CHIP DIODE)</p>  <p>MA8054-W MA8130-W</p>	
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ALIGNMENT LOCATION

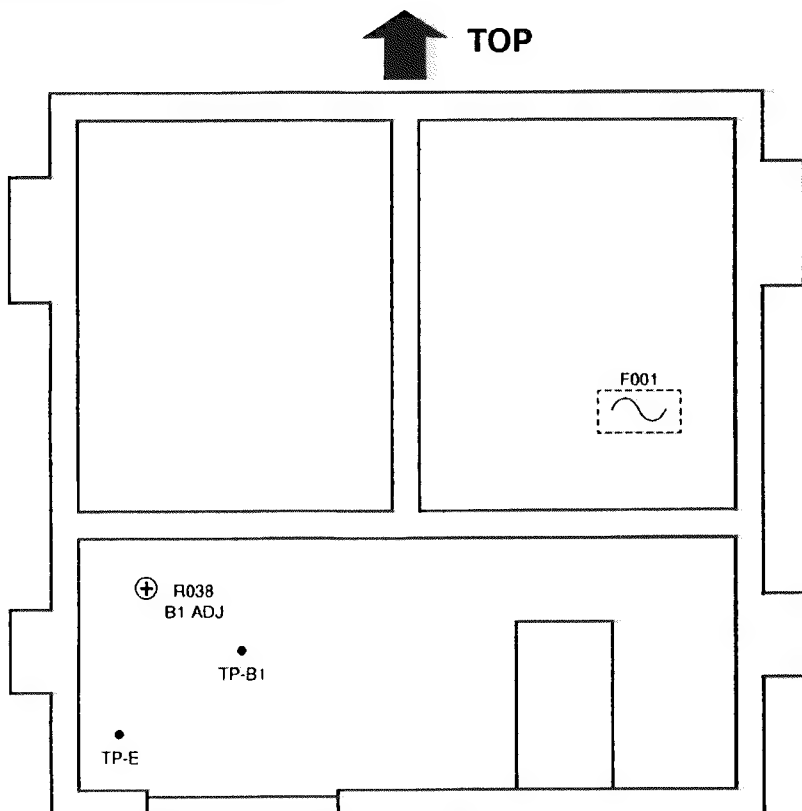
• SIGNAL PWB (PARTS SIDE)



● DEFLECTION PWB (PATTERN SIDE)



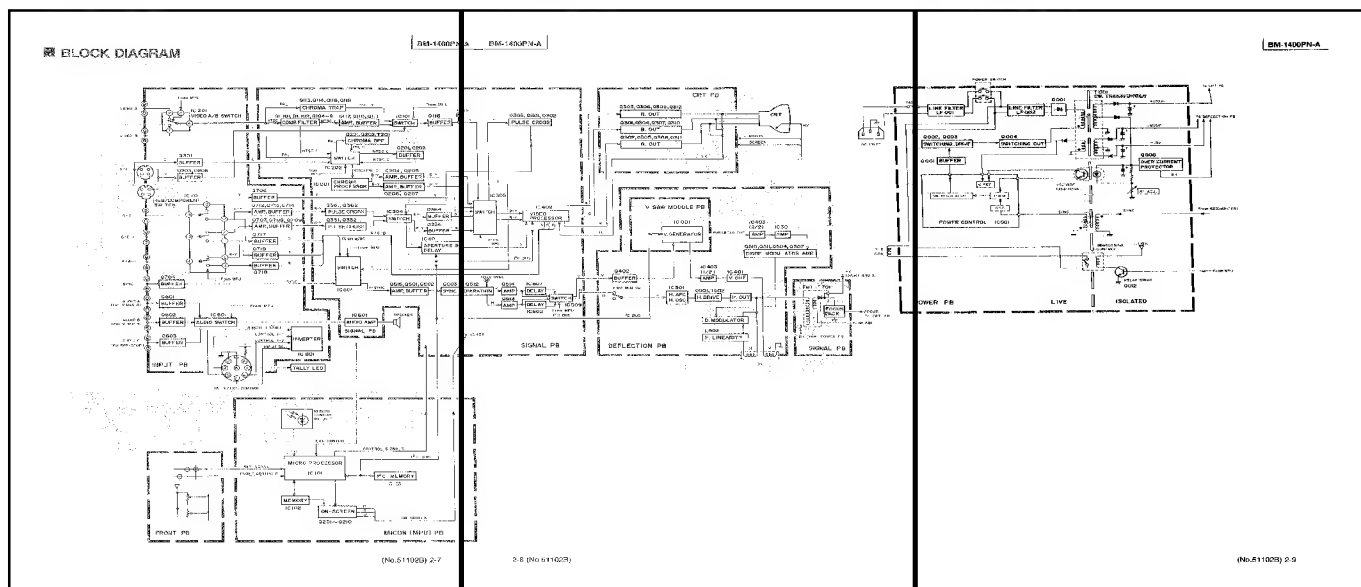
● POWER PWB (PATTERN SIDE)



P2-7,8,9-a

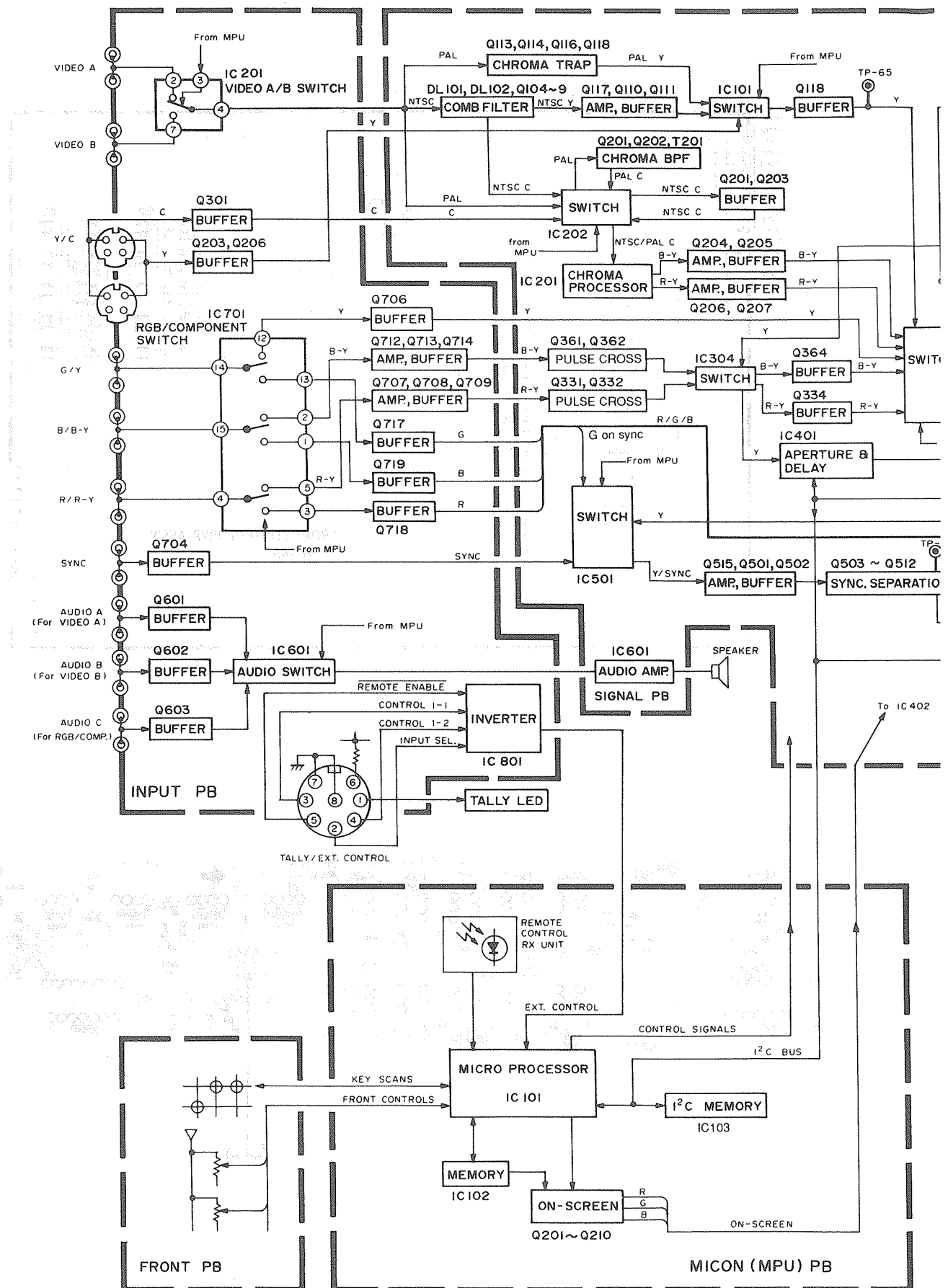
P2-7,8,9-b

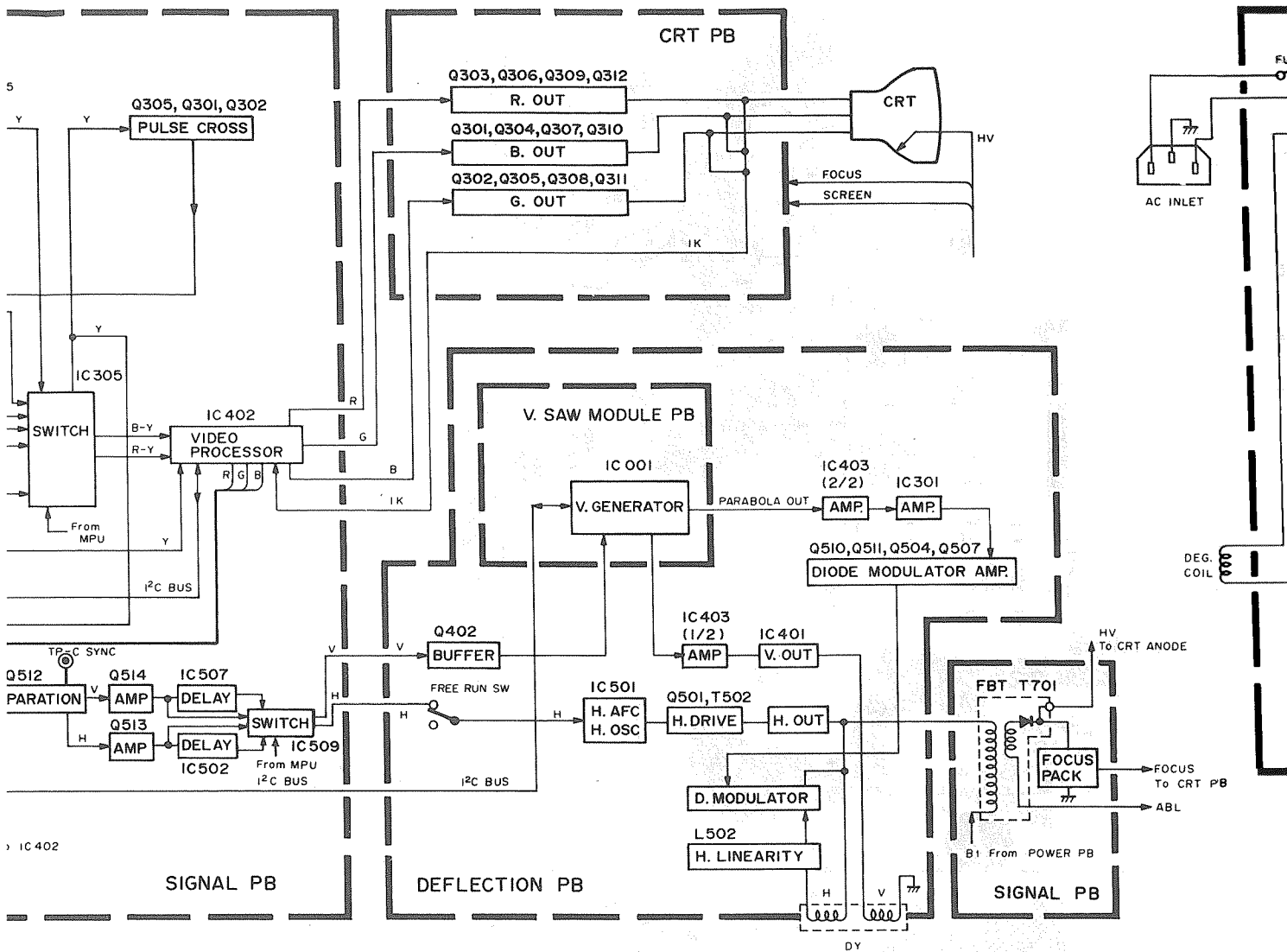
P2-7,8,9-c



BLOCK DIAGRAM

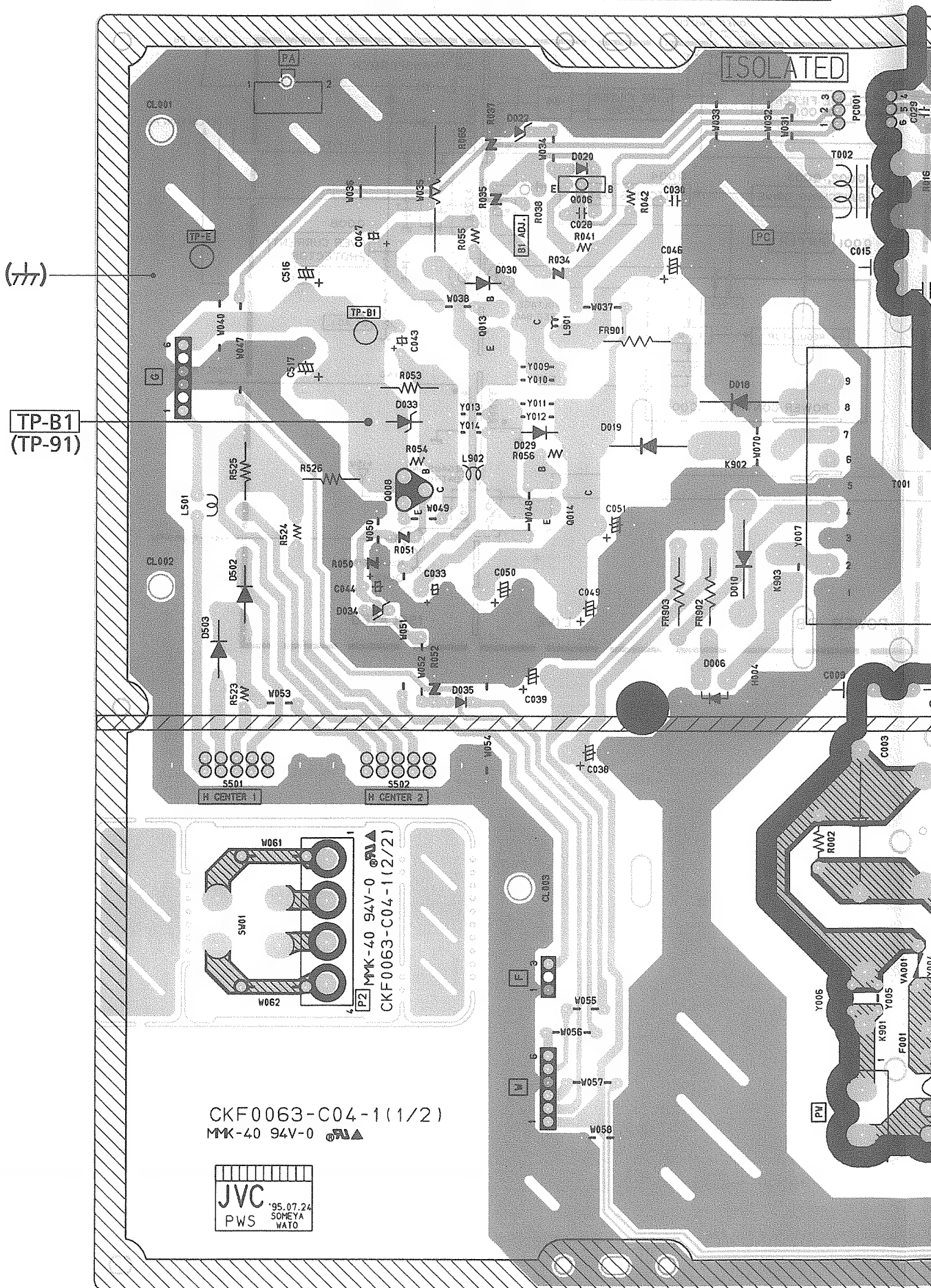
BM-1400PN-A

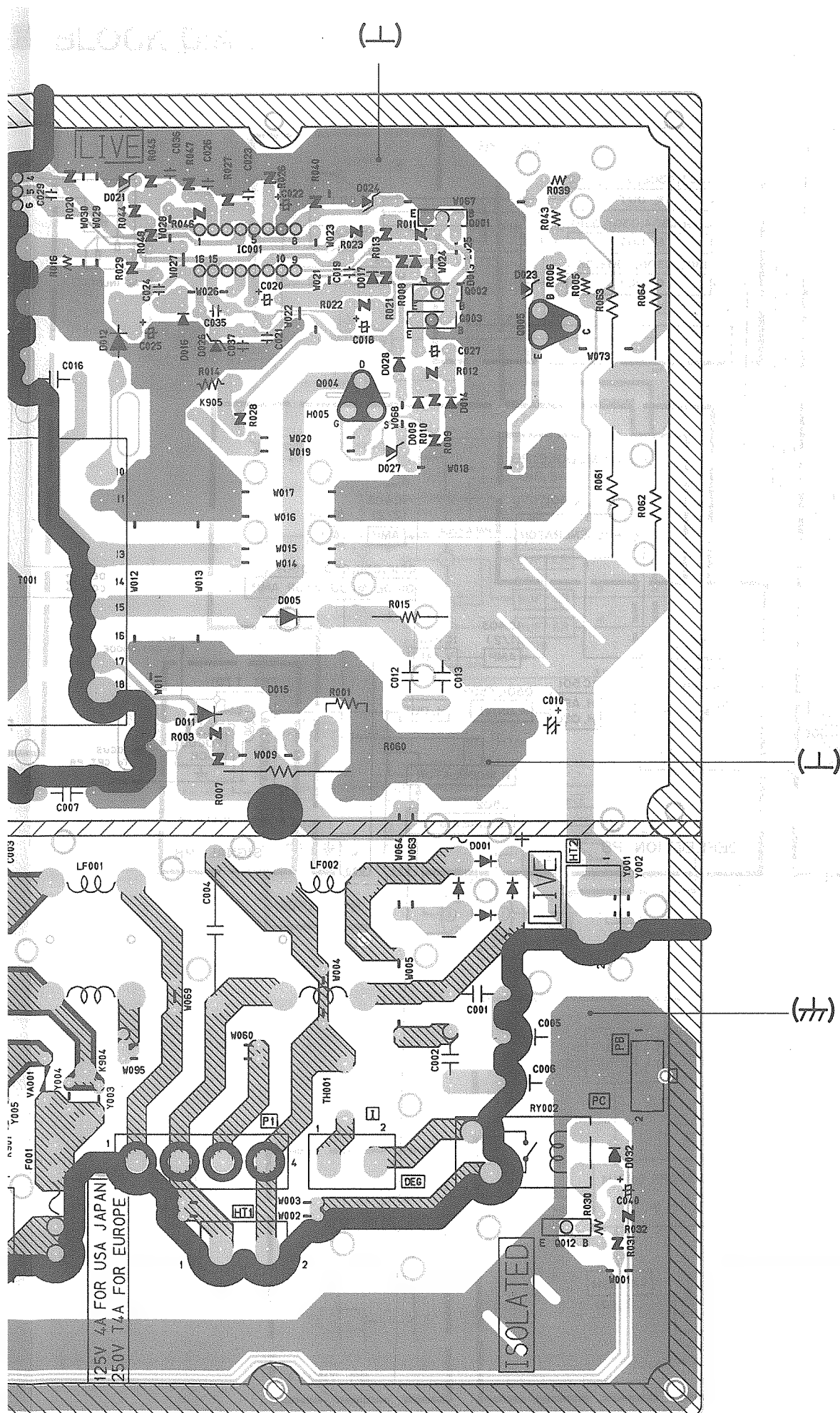




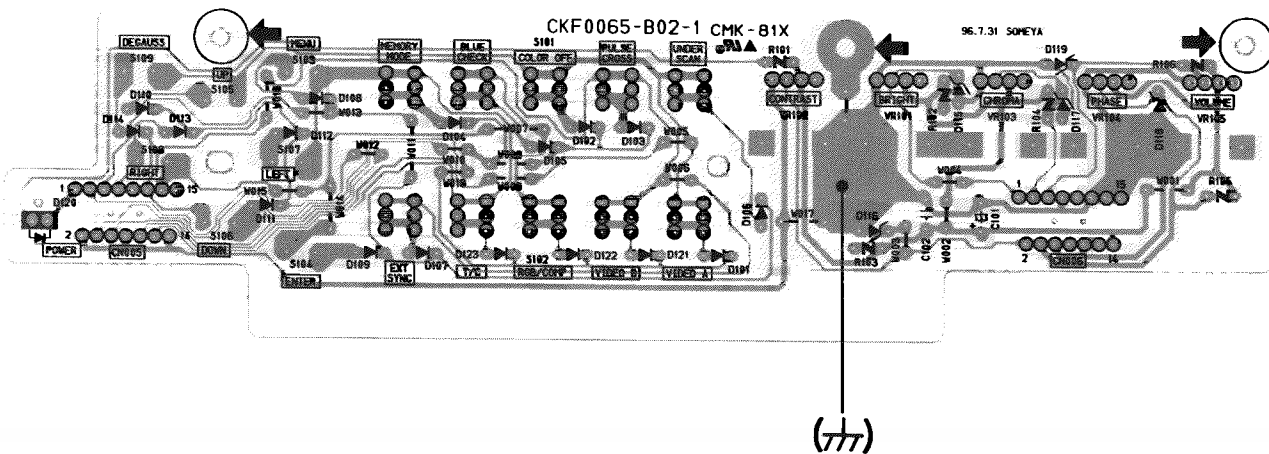
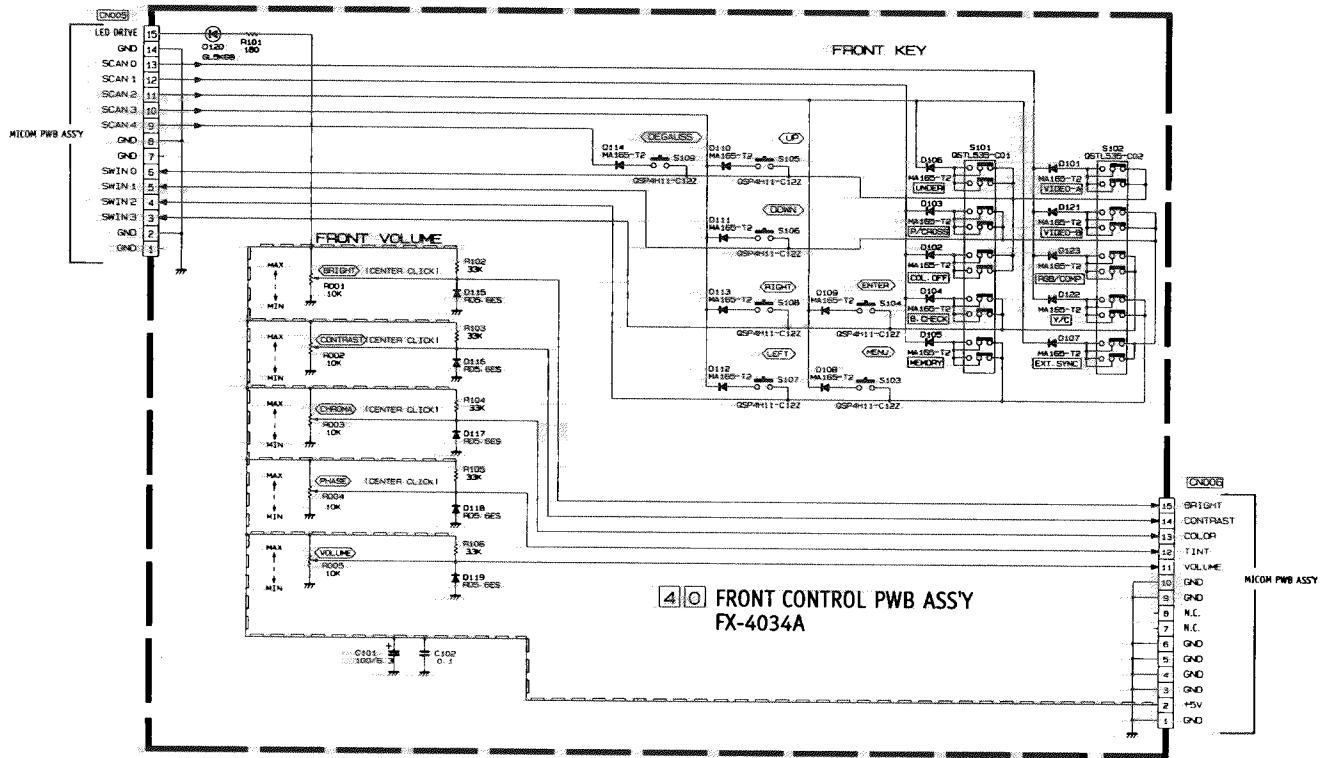


POWER PWB PATTERN DIAGRAM (FX-9038A)

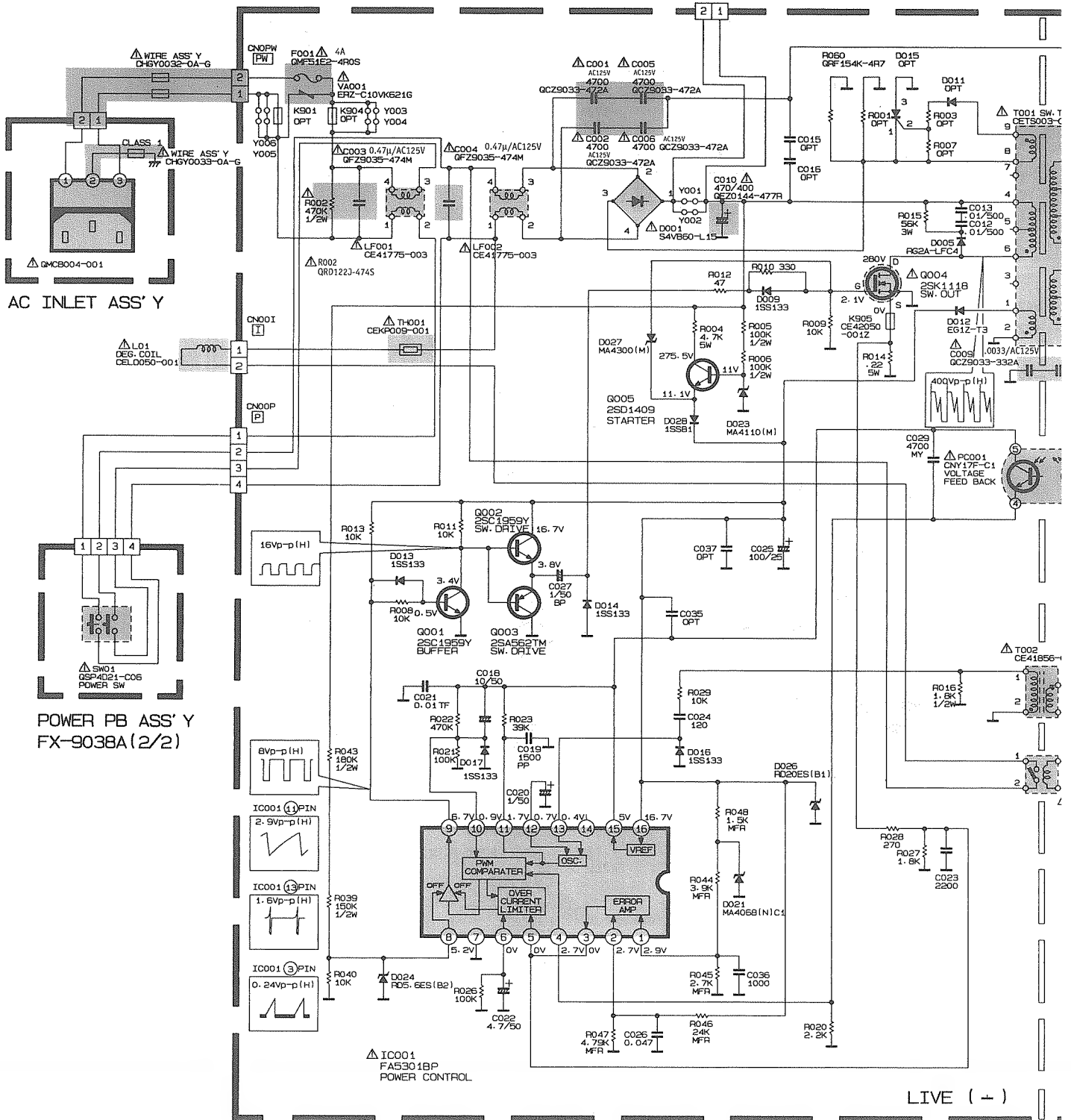


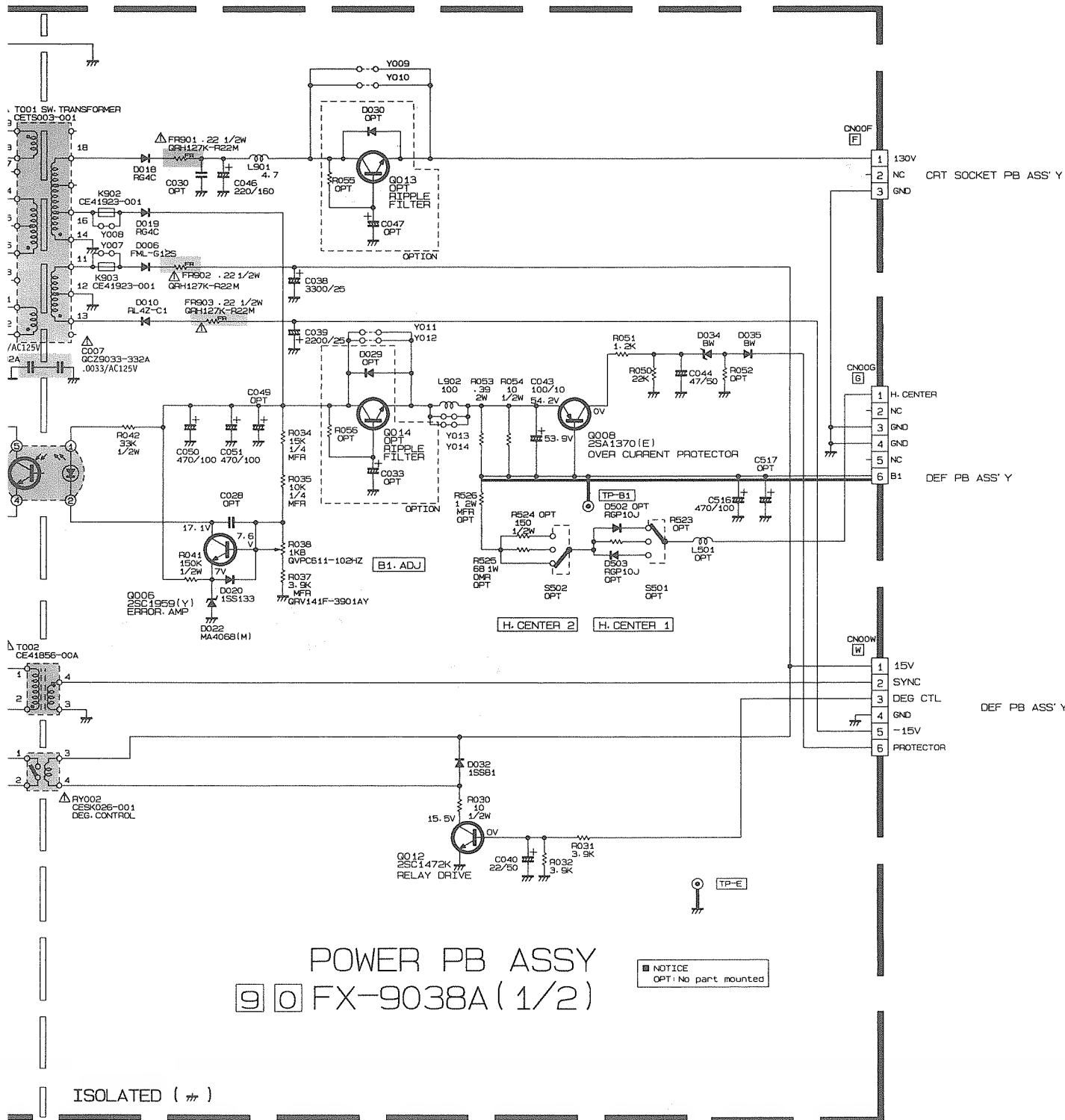


FRONT CONTROL PWB CIRCUIT DIAGRAM / PATTERN DIAGRAM (FX-4034A)

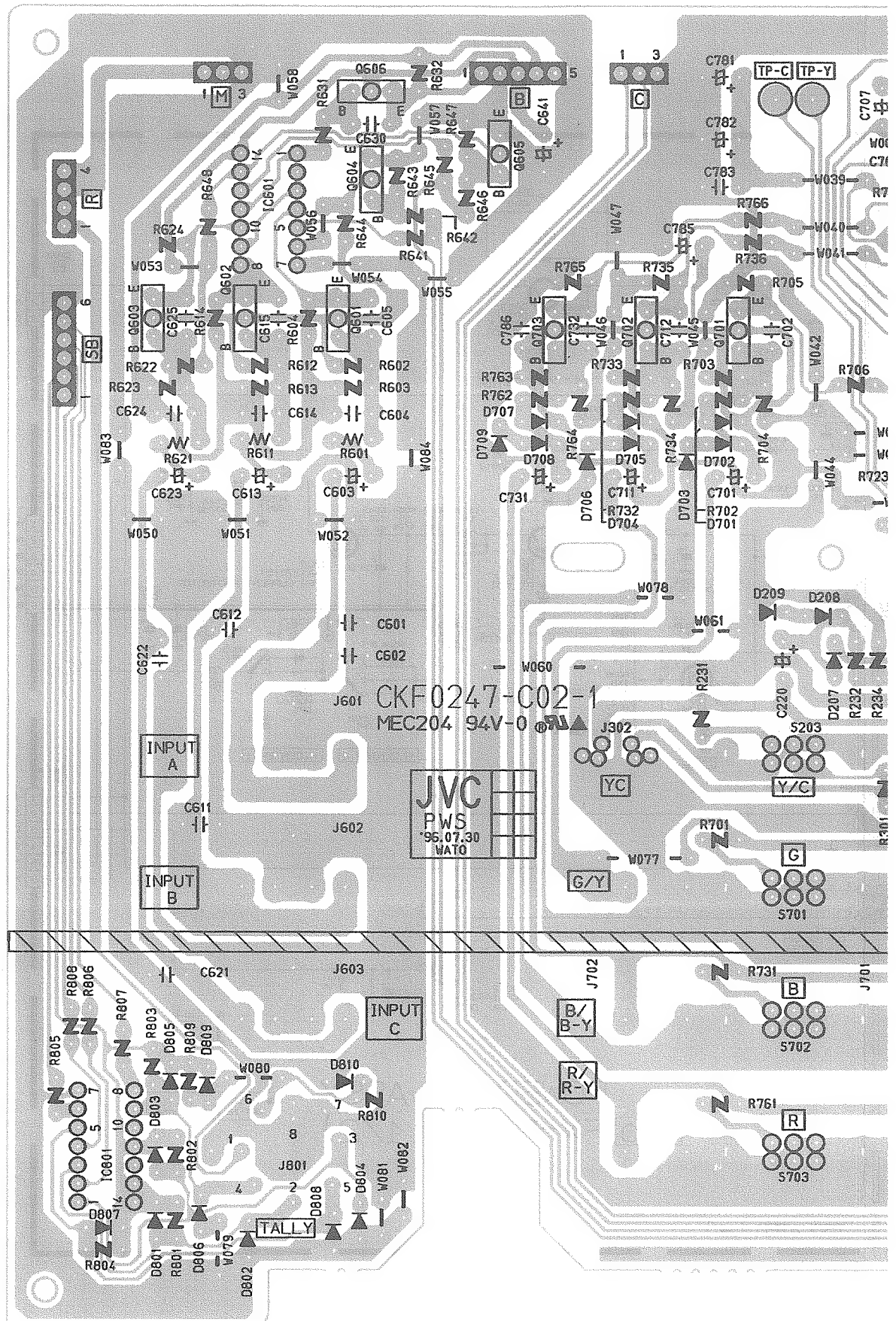


POWER PWB CIRCUIT DIAGRAM



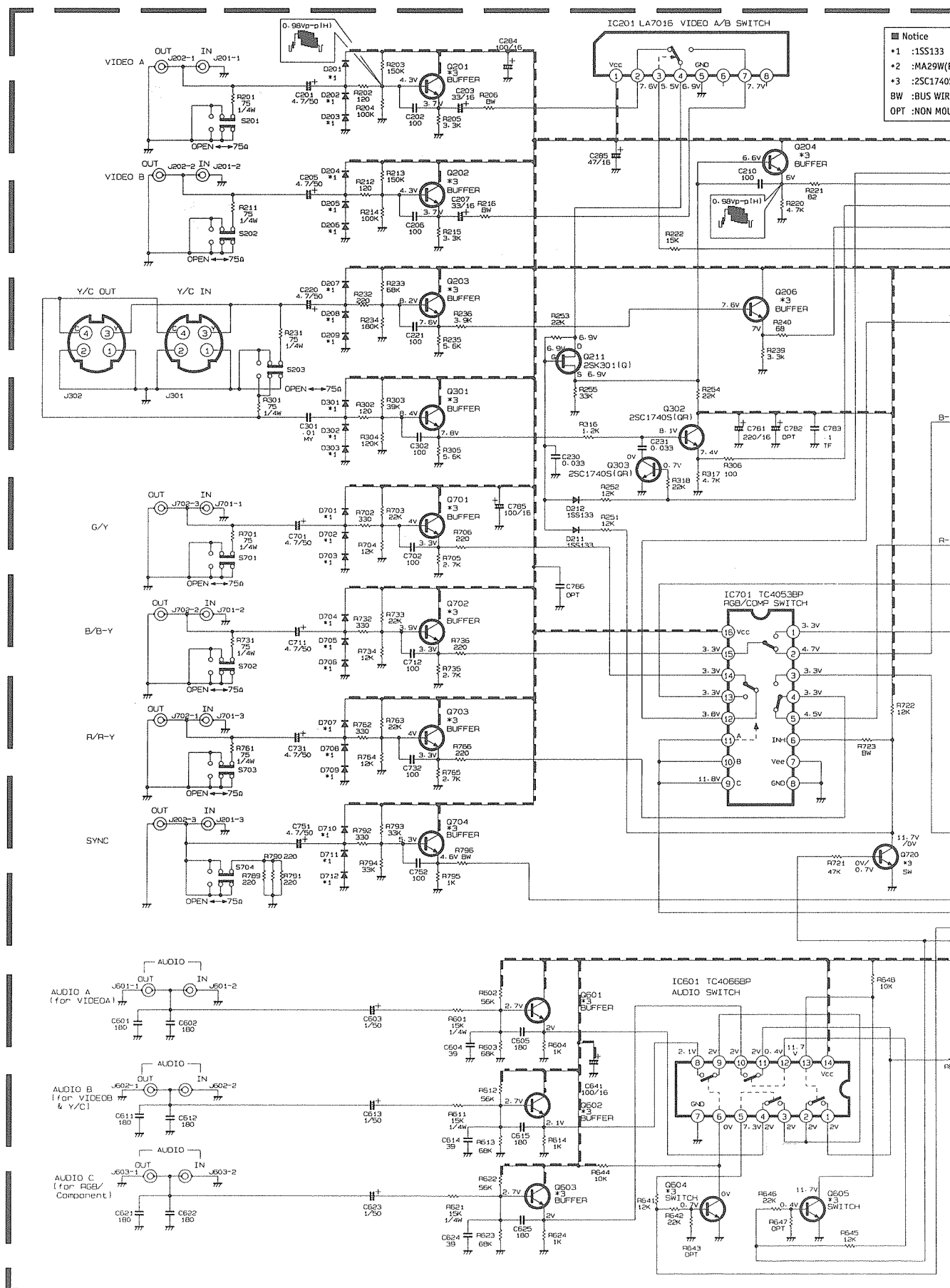


INPUT PWB PATTERN DIAGRAM (FX-6052A)

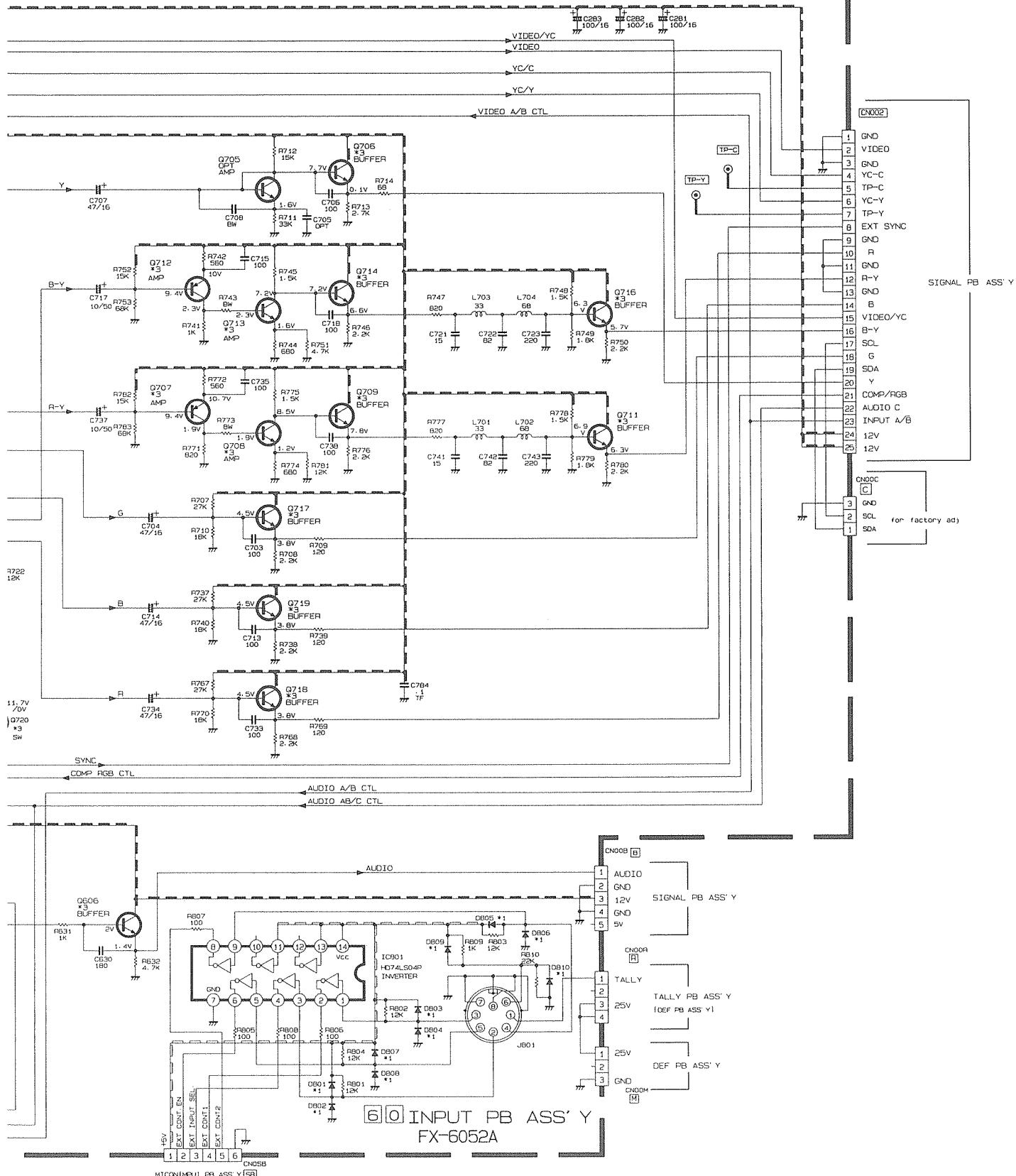




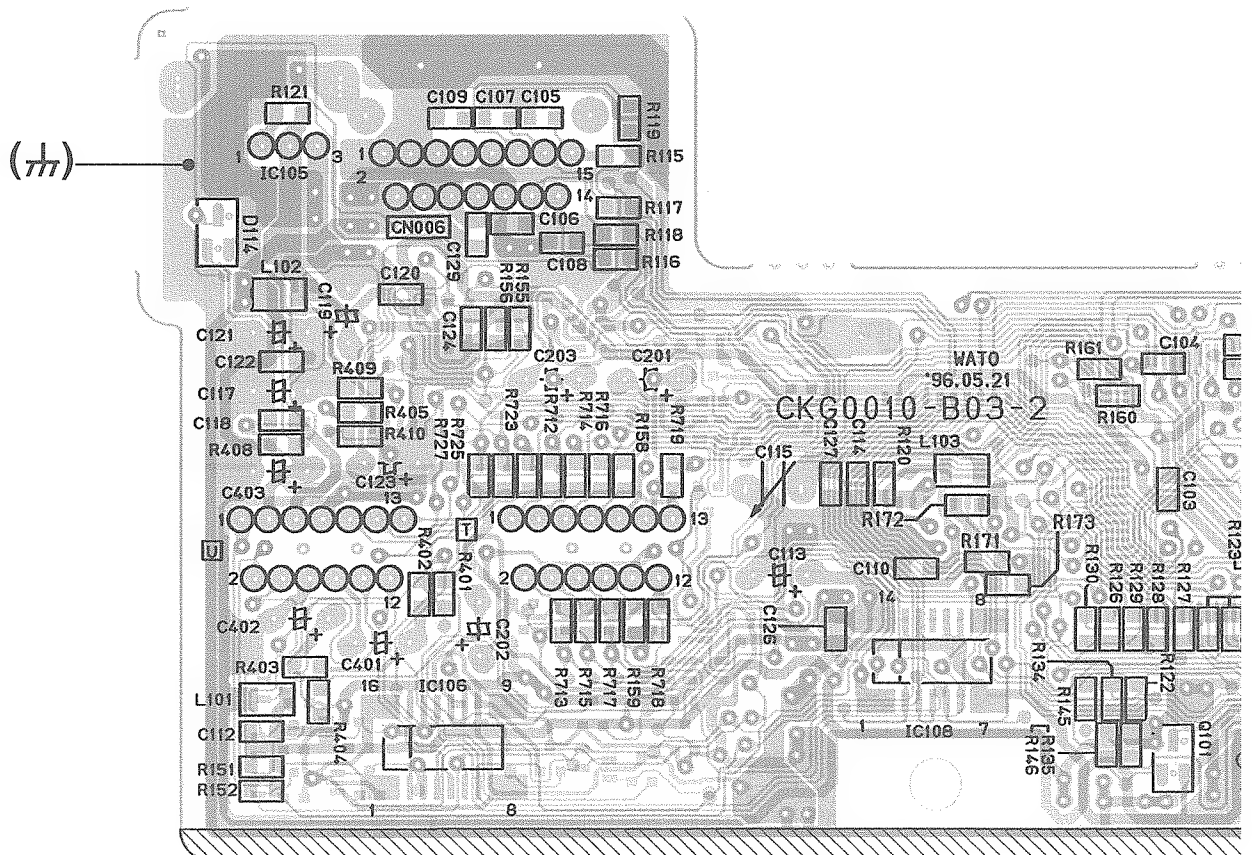
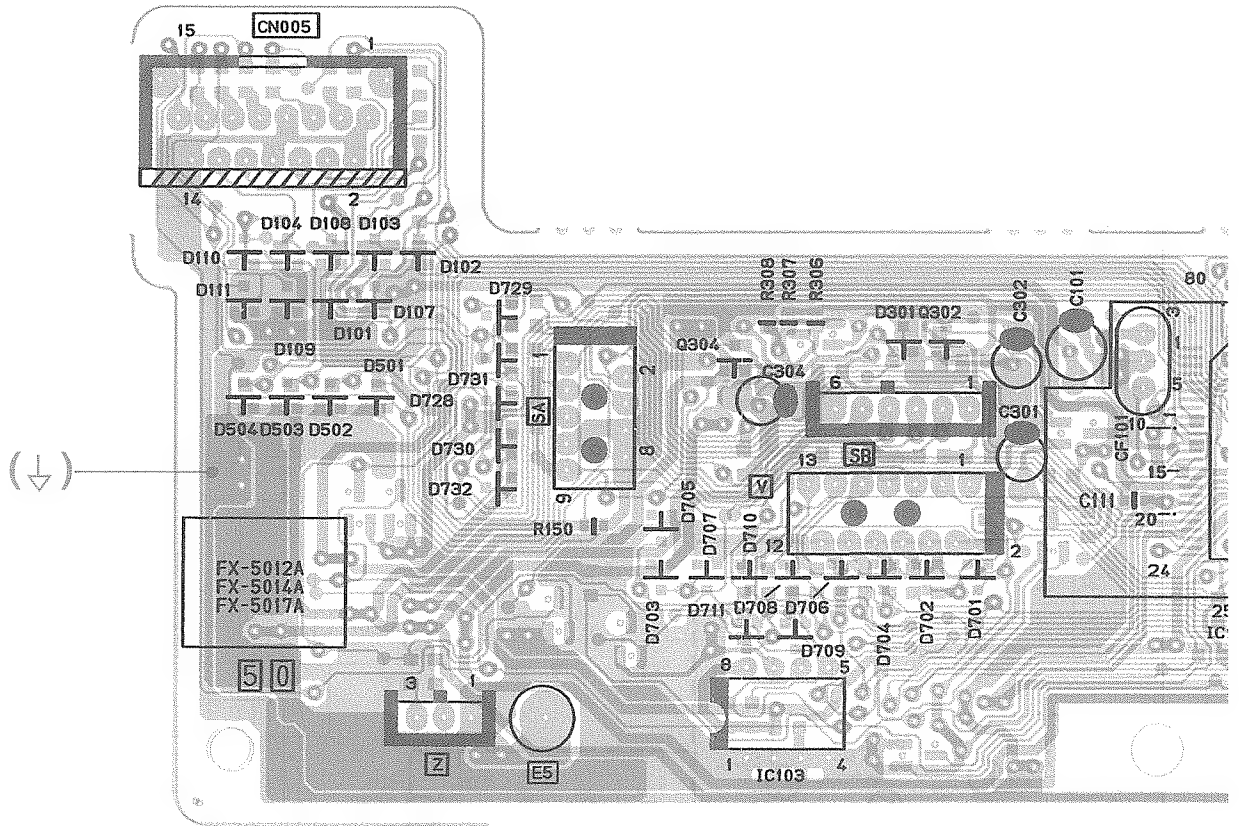
INPUT PWB CIRCUIT DIAGRAM

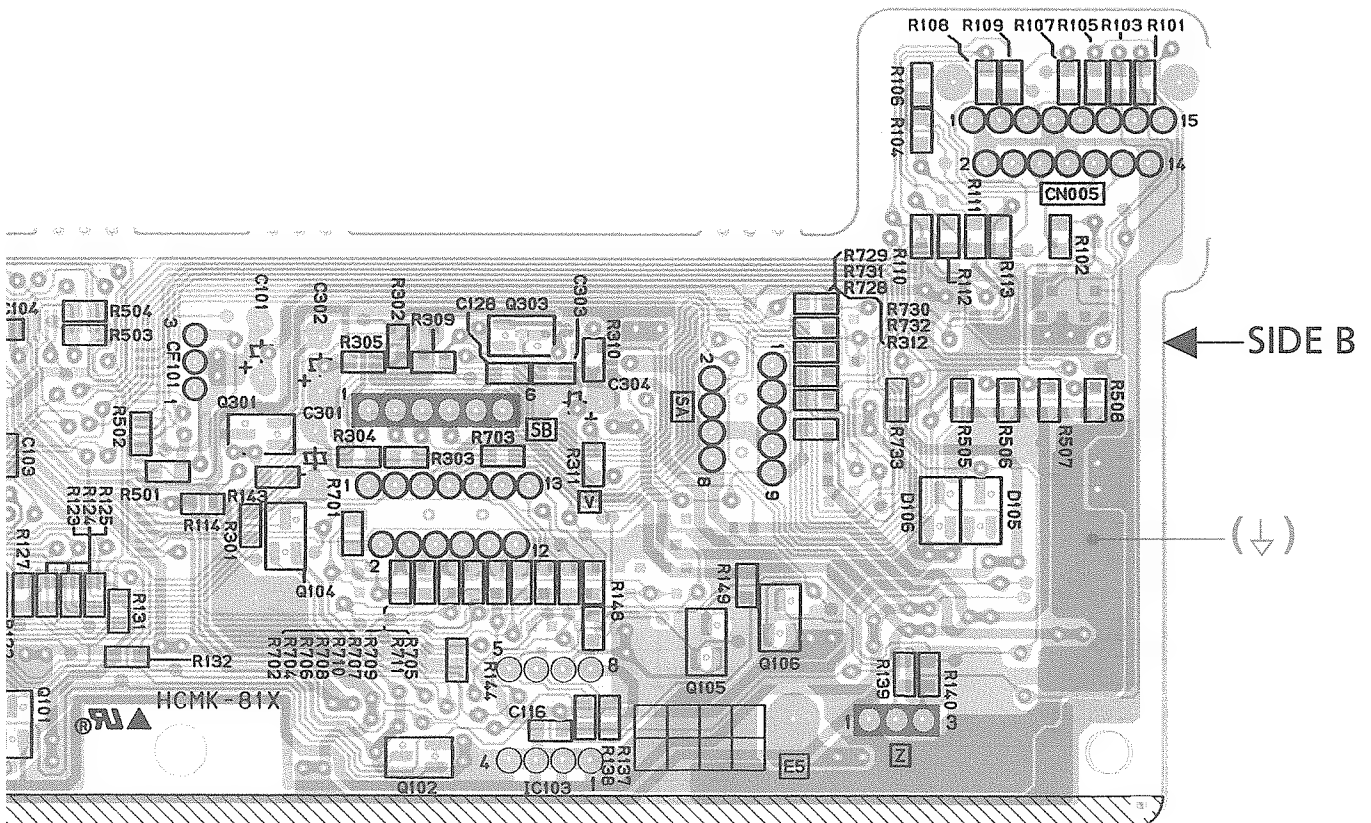
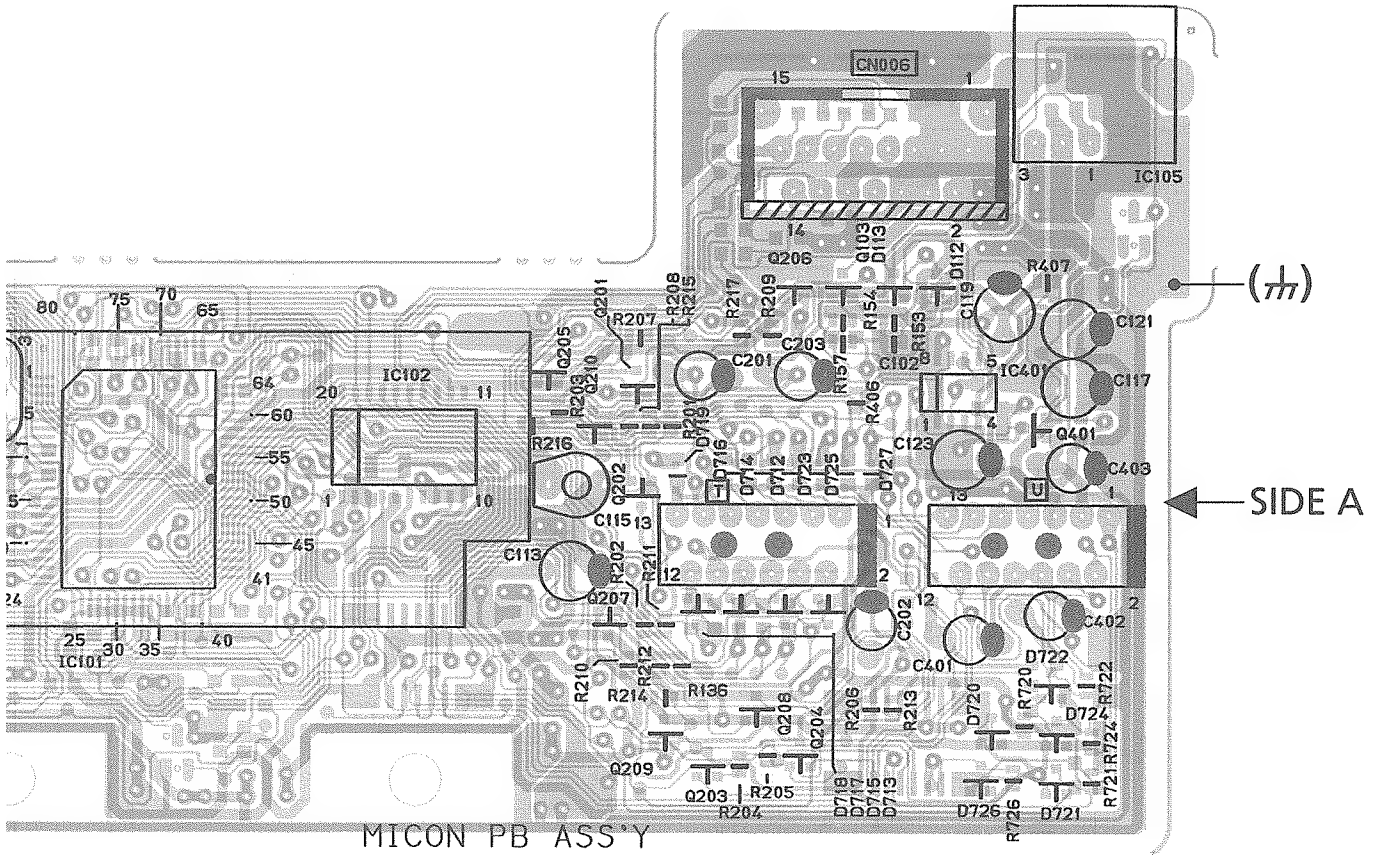


Notice
 1 :1S5133
 2 :MA29W(B)
 3 :2SC1740S(R)
 # :BUS WIRE
 PT :NON MOUNT(OPEN)



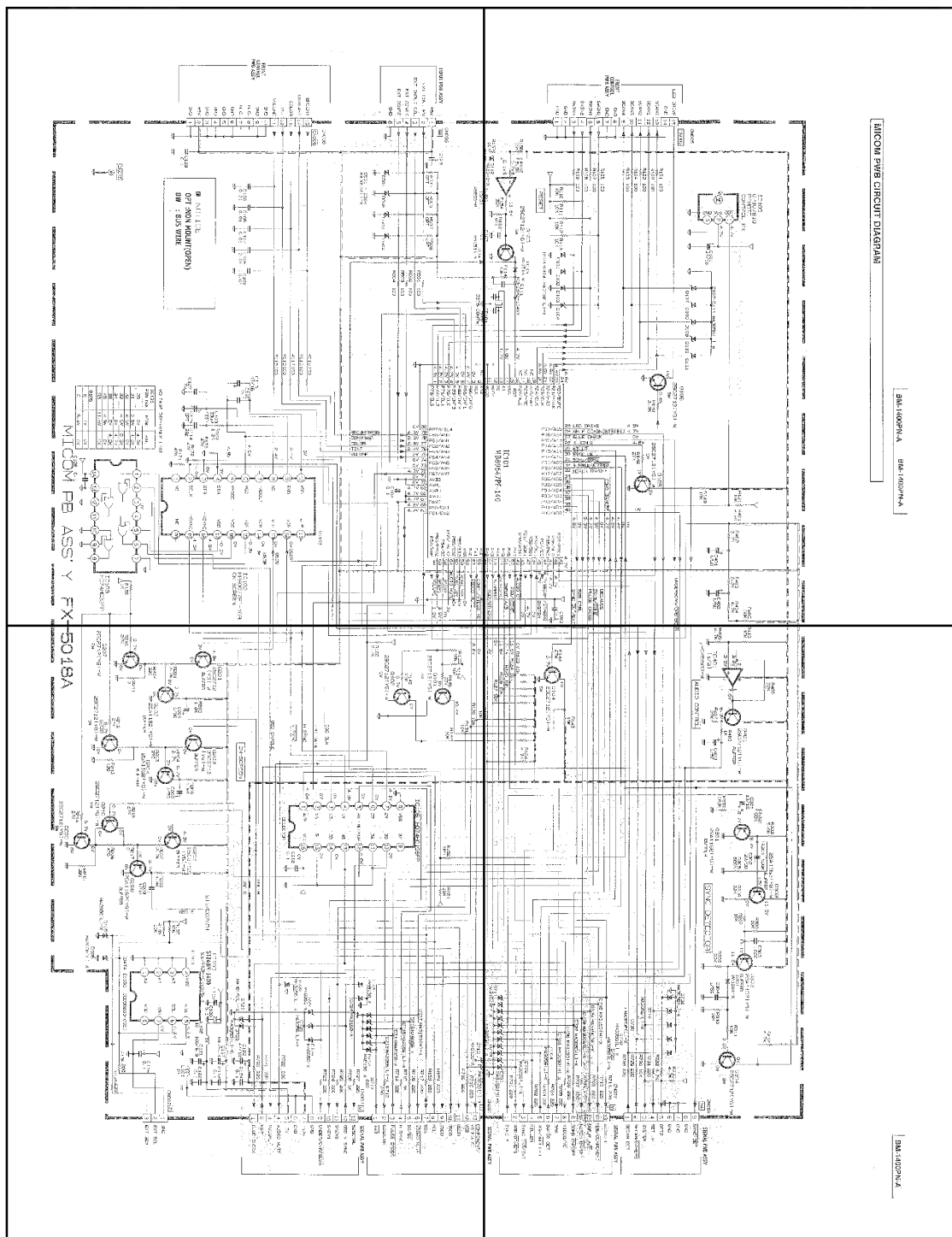
MICOM PWB PATTERN DIAGRAM (FX-5018A)





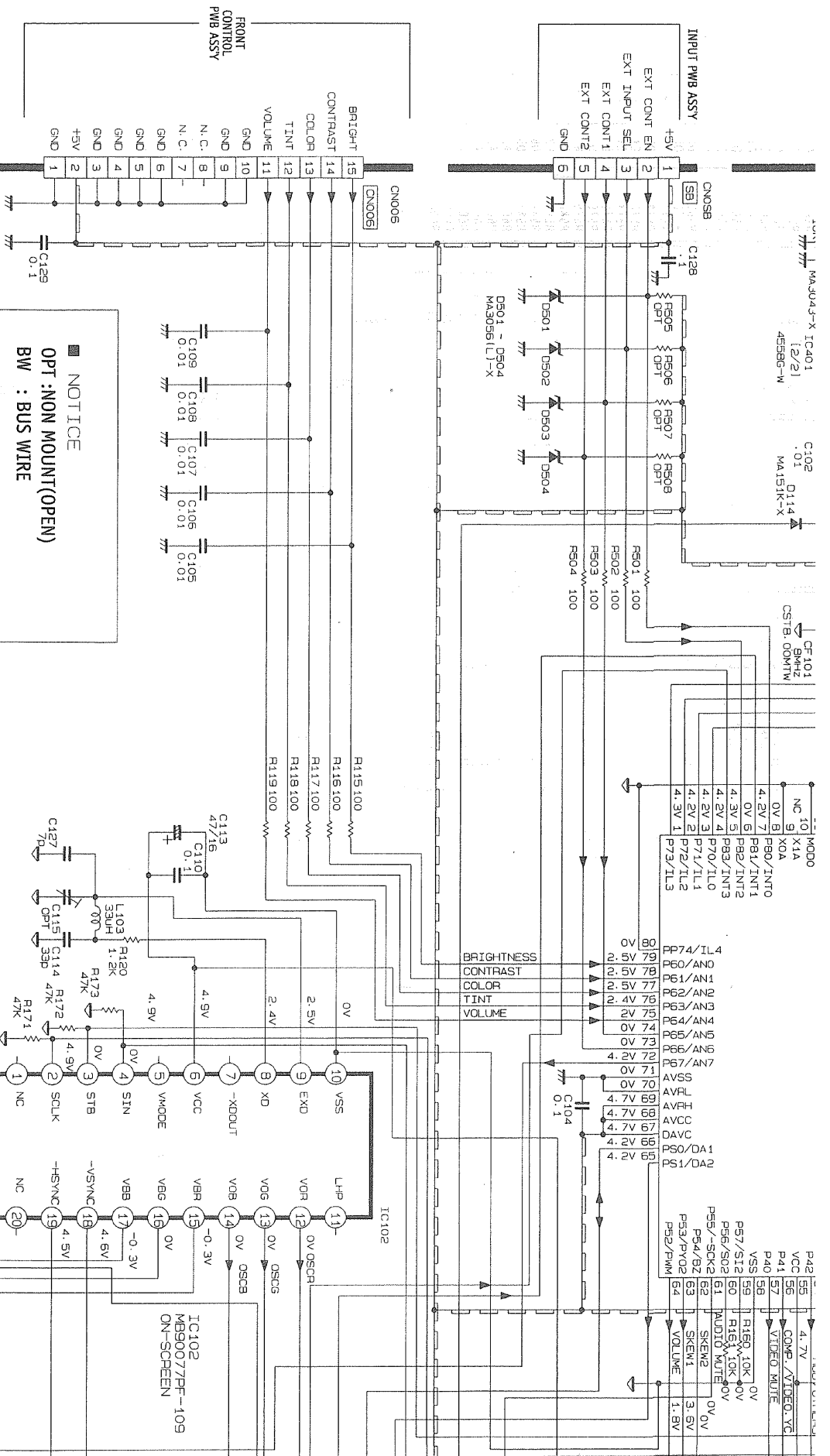
P2-21,22,23-a

P2-21,22,23-b



P2-21,22,23-c

P2-21,22,23-d

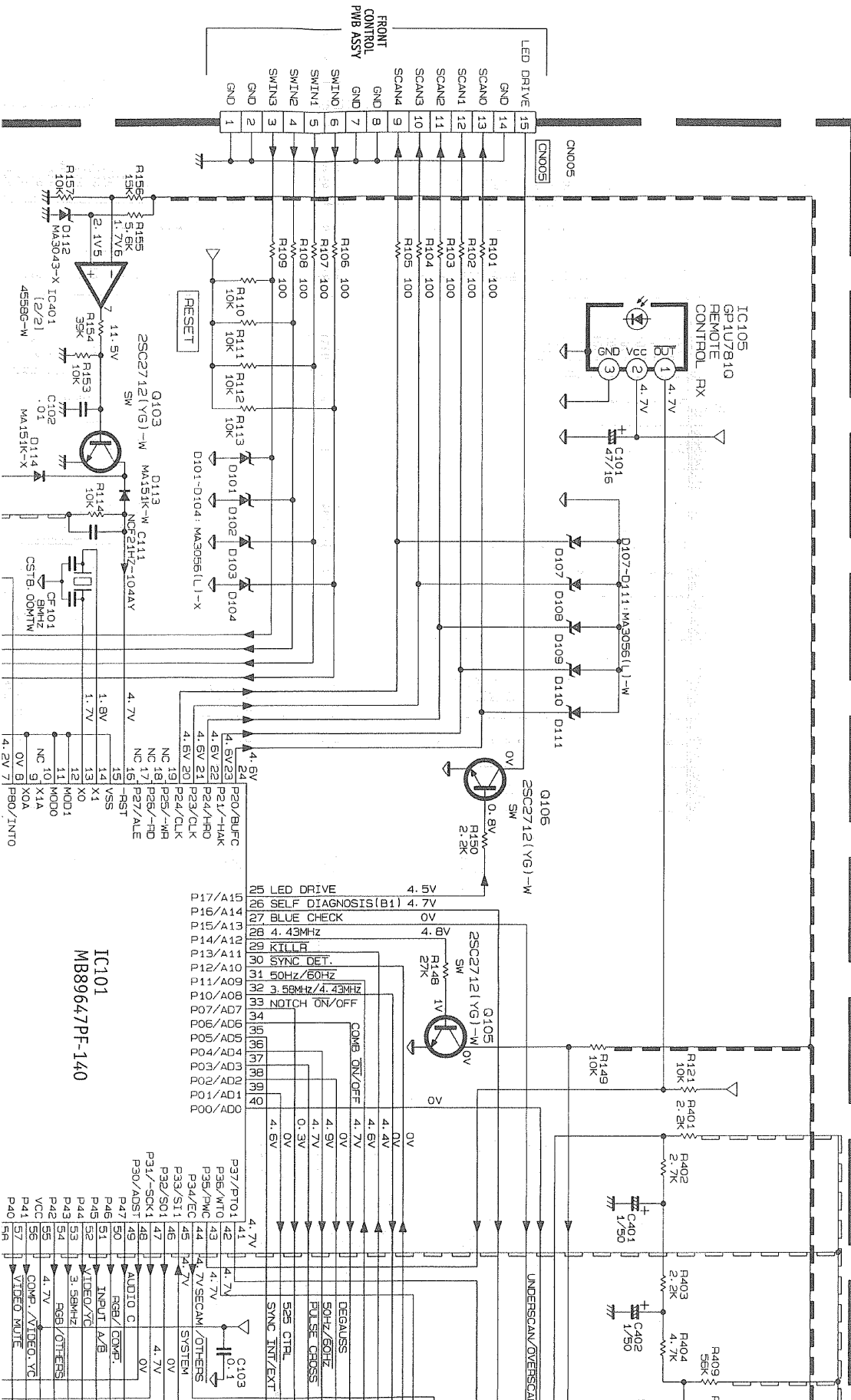


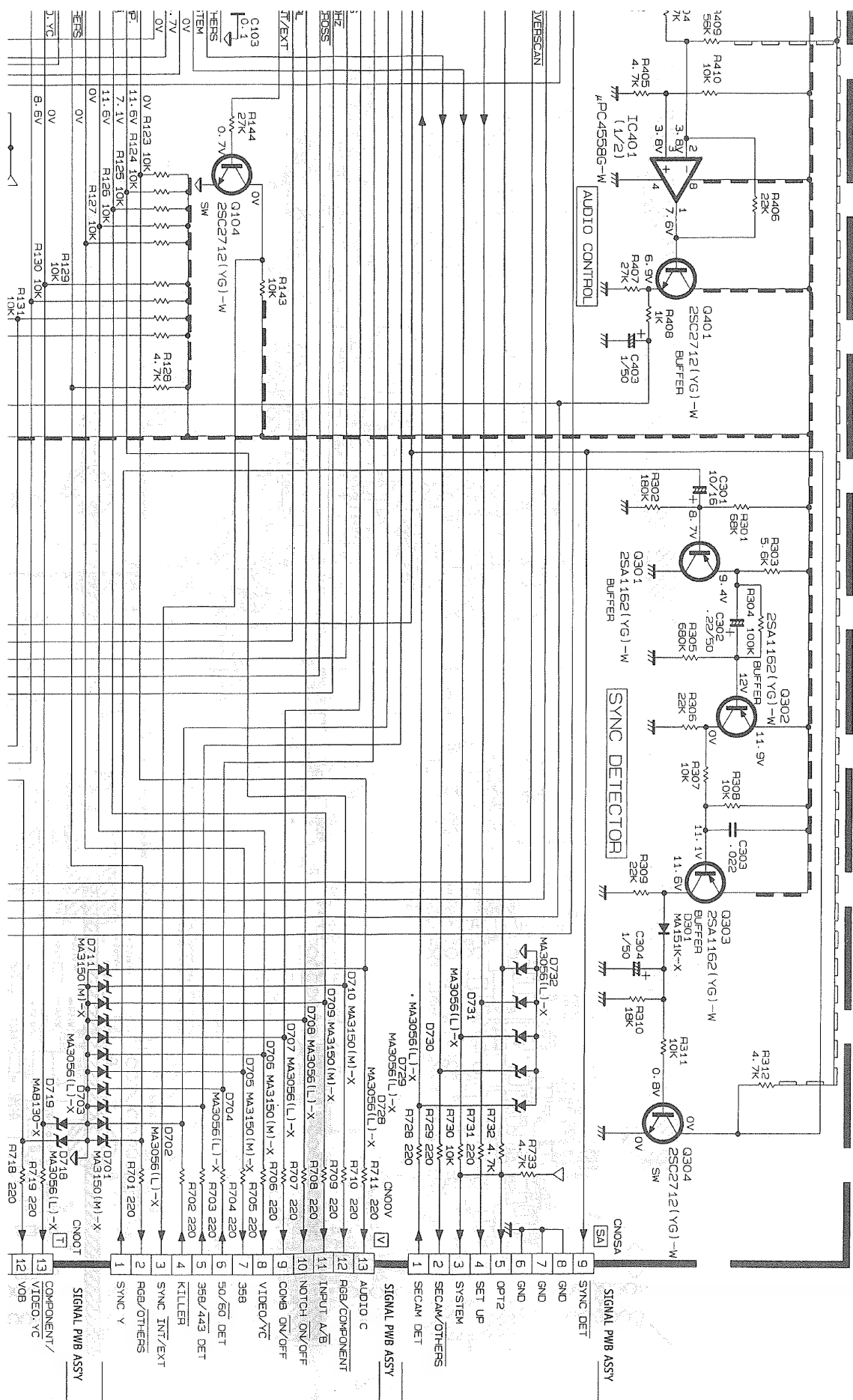
MICOM PB ASS'Y EX-

MICOM PWB CIRCUIT DIAGRAM

BM-1400PN-A

BM-1400PN-A



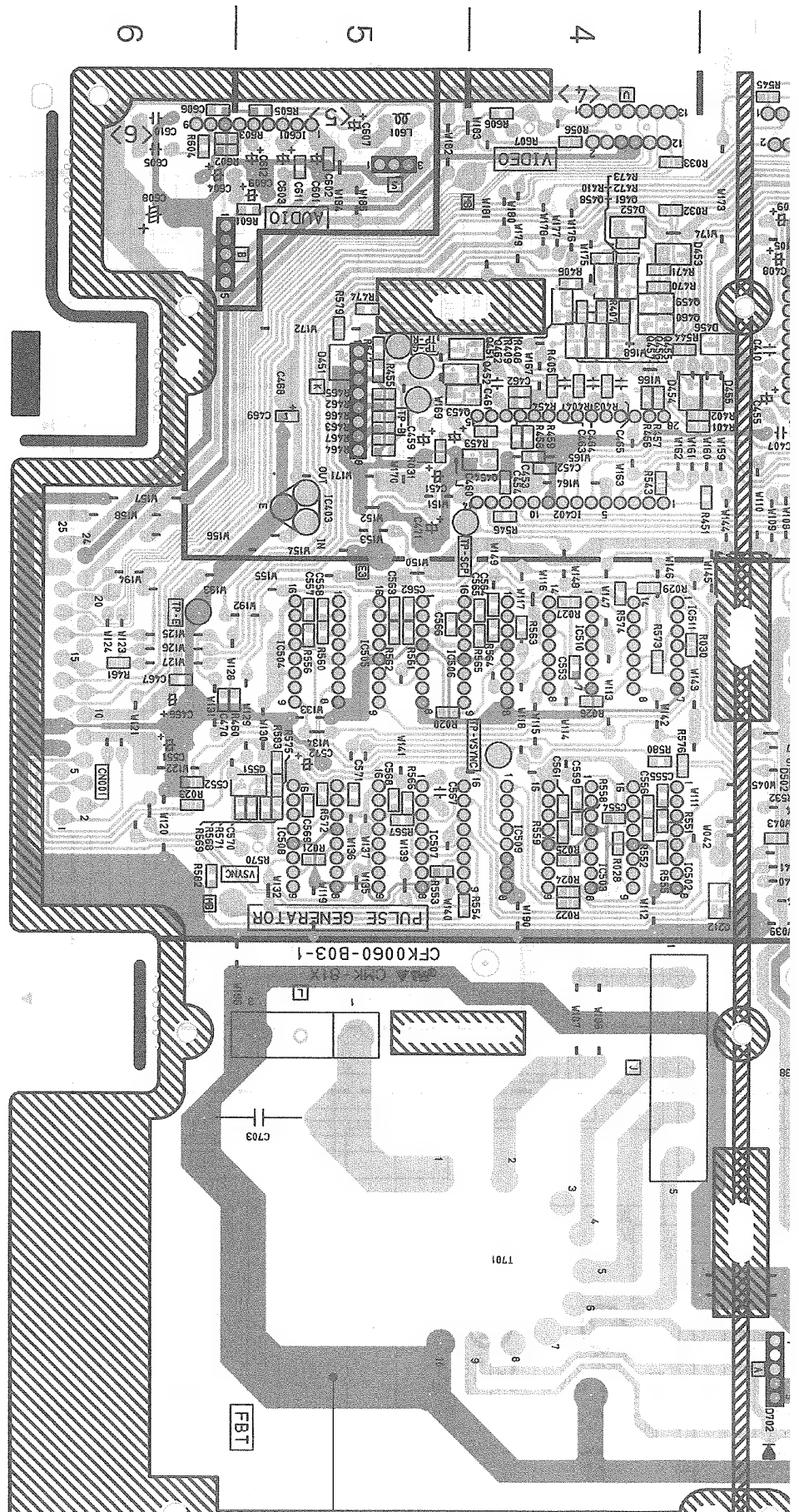


[illegible]

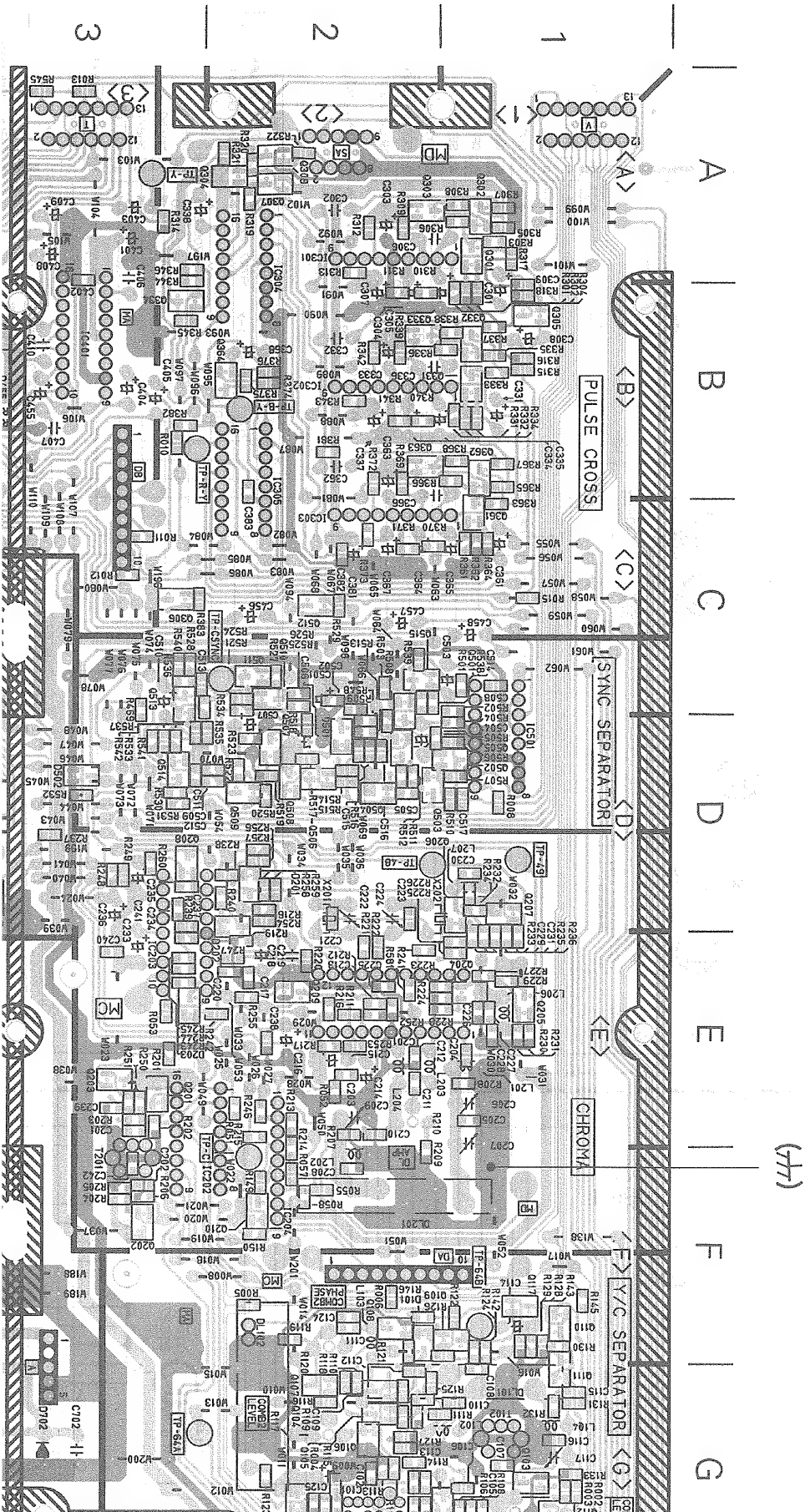
BM-100PN.A

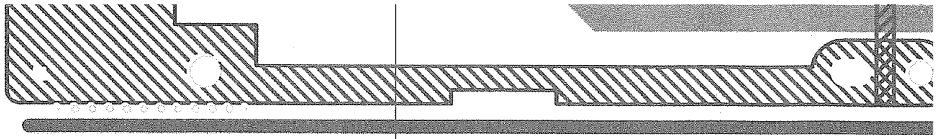
SIGNAL P/W2 PATTERN DIAGRAM (FX-100RA)

BM-100PN.A



SIGNAL PWB PATTERN DIAGRAM (FX-1084A)

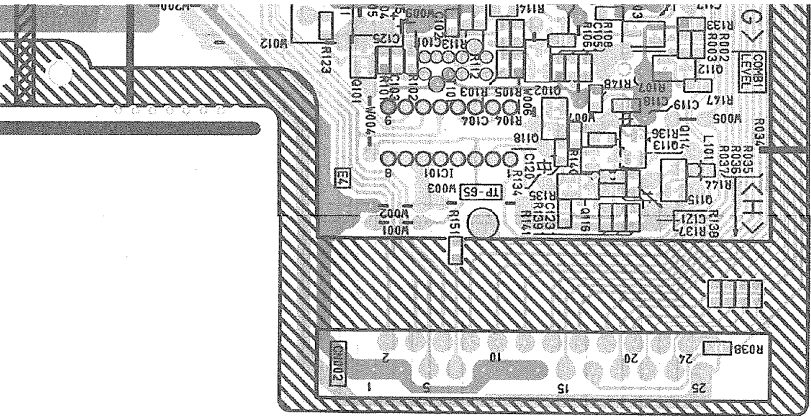




(77)

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C218	E2	A	C557	C5	B	0456	84	B	R146	F2	B	R362	C1	B	R559	D4	B
C219	E2	B	C558	D4	B	0457	84	B	R147	G1	B	R363	C1	B	R560	C5	B
C220	D2	B	C559	D4	B	0458	84	B	R148	G1	B	R364	C1	B	R561	C5	B
C221	D2	A	C561	C5	B	0459	84	B	R149	F2	B	R365	F2	B	R562	C5	B
C222	D2	B	C562	C5	B	0460	84	B	R150	F2	B	R366	F2	B	R563	C4	B
C223	D2	B	C563	C5	B	0461	84	B	R151	F2	B	R367	F2	B	R564	C4	B
C224	D2	A	C564	C4	B	0462	84	B	R201	F2	B	R368	F2	B	R565	C4	B
C225	D2	B	C565	C4	B	0501	84	B	R202	F2	B	R369	F2	B	R566	C4	B
C226	E1	B	C566	C5	B	0502	84	B	R203	F2	B	R370	F2	B	R567	C4	B
C227	E1	B	C567	C5	B	0503	84	B	R204	F2	B	R371	F2	B	R568	C4	B
C228	E1	B	C568	C5	B	0504	84	B	R205	F2	B	R372	F2	B	R569	C4	B
C229	E1	B	C569	C5	B	0505	84	B	R206	F2	B	R373	F2	B	R570	C4	B
C230	D1	B	C570	D5	B	0506	84	B	R207	F2	B	R374	F2	B	R571	C4	B
C231	E1	B	C571	D5	B	0507	84	B	R208	F2	B	R375	F2	B	R572	C4	B
C232	E3	B	C572	D5	B	0508	84	B	R209	F2	B	R376	F2	B	R573	C4	B
C233	E3	B	C575	D5	B	0509	84	B	R210	F2	B	R381	F2	B	R574	C4	B
C234	D3	B	C601	A5	B	0510	84	B	R211	F2	B	R382	F2	B	R575	C4	B
C235	D3	B	C602	A5	B	0511	84	B	R212	F2	B	R383	F2	B	R576	C4	B
C236	D3	B	C603	A5	B	0512	84	B	R213	F2	B	R401	F2	B	R579	C4	B
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C239	E3	B	C606	A6	B	0515	84	B	R216	F2	B	R404	F2	B	R582	C4	B
C240	E3	B	C607	A5	B	0551	84	B	R217	F2	B	R405	F2	B	R583	C4	B
C241	D3	B	C608	A5	B	0551	84	B	R218	F2	B	R406	F2	B	R601	C4	B
C242	F3	B	C609	A6	B	0608	84	B	R219	F2	B	R407	F2	B	R602	C4	B
C301	B1	A	C609	A6	B	0609	84	B	R219	F2	B	R407	F2	B	R603	C4	B
C302	A2	A	C610	A6	B	0610	84	B	R220	F2	B	R408	F2	B	R604	C4	B
C303	A2	A	C611	A5	B	0611	84	B	R221	F2	B	R409	F2	B	R605	C4	B
C304	B2	A	C612	A5	B	0612	84	B	R222	F2	B	R410	F2	B	R606	C4	B
C305	B2	A	C702	C3	B	0612	84	B	R223	F2	B	R451	F2	B	R606	C4	B
C306	B2	A	C703	C3	B	0612	84	B	R224	F2	B	R452	F2	B	R607	C4	B
C307	B1	A	D101	F2	B	0612	84	B	R225	F2	B	R453	F2	B	R608	C4	B
C308	B1	A	D201	D2	B	0612	84	B	R226	F2	B	R454	F2	B	R609	C4	B
C309	B1	B	D202	E2	B	0612	84	B	R227	F2	B	R455	F2	B	R610	C4	B
C331	B1	A	D203	E3	B	0612	84	B	R228	F2	B	R456	F2	B	R611	C4	B
C332	B2	A	D451	B5	B	0612	84	B	R229	F2	B	R457	F2	B	R612	C4	B
C333	B2	A	D452	B5	B	0612	84	B	R230	F2	B	R458	F2	B	R613	C4	B
C334	B2	A	D453	B5	B	0612	84	B	R231	F2	B	R459	F2	B	R614	C4	B
C335	B2	A	D454	B5	B	0612	84	B	R232	F2	B	R460	F2	B	R615	C4	B
C336	B1	A	D455	B5	B	0612	84	B	R233	F2	B	R461	F2	B	R616	C4	B
C337	B2	A	D456	B5	B	0612	84	B	R234	F2	B	R462	F2	B	R617	C4	B
C338	A3	A	D502	D3	B	0612	84	B	R235	F2	B	R463	F2	B	R618	C4	B
C361	C1	A	D511	D2	B	0612	84	B	R236	F2	B	R464	F2	B	R619	C4	B
C362	B2	A	D703	H1	B	0612	84	B	R237	F2	B	R465	F2	B	R620	C4	B
C363	B2	A	L101	H1	B	0612	84	B	R238	F2	B	R466	F2	B	R621	C4	B
C364	C2	A	L102	G2	B	0612	84	B	R239	F2	B	R467	F2	B	R622	C4	B
C365	C1	A	L103	F2	B	0612	84	B	R240	F2	B	R468	F2	B	R623	C4	B
C366	C2	A	L104	G1	B	0612	84	B	R241	F2	B	R469	F2	B	R624	C4	B
C367	C2	A	L201	E1	B	0612	84	B	R242	F2	B	R470	F2	B	R625	C4	B
C368	B2	A	L202	F2	B	0612	84	B	R243	F2	B	R471	F2	B	R626	C4	B
C381	C2	A	L203	E2	B	0612	84	B	R244	F2	B	R472	F2	B	R627	C4	B
C382	C2	B	L204	E2	B	0612	84	B	R245	F2	B	R473	F2	B	R628	C4	B
C383	C2	B	L206	E1	B	0612	84	B	R246	F2	B	R474	F2	B	R629	C4	B
C401	A3	A	L207	D1	B	0612	84	B	R247	F2	B	R475	F2	B	R630	C4	B
C402	B3	A	L601	A5	B	0612	84	B	R248	F2	B	R476	F2	B	R631	C4	B
C403	A3	A	Q101	G2	B	0612	84	B	R249	F2	B	R477	F2	B	R632	C4	B
C404	B3	A	Q102	G2	B	0612	84	B	R250	F2	B	R478	F2	B	R633	C4	B
C405	B3	A	Q103	G1	B	0612	84	B	R251	F2	B	R479	F2	B	R634	C4	B
C406	A3	A	Q104	G2	B	0612	84	B	R252	F2	B	R480	F2	B	R635	C4	B
C407	B3	A	Q105	G2	B	0612	84	B	R253	F2	B	R481	F2	B	R636	C4	B
C408	A3	A	Q106	G2	B	0612	84	B	R254	F2	B	R482	F2	B	R637	C4	B
C409	A3	A	Q107	G2	B	0612	84	B	R255	F2	B	R483	F2	B	R638	C4	B
C410	B3	A	Q108	G2	B	0612	84	B	R256	F2	B	R484	F2	B	R639	C4	B
C451	B5	A	Q109	F1	B	0612	84	B	R257	F2	B	R485	F2	B	R640	C4	B

G | H



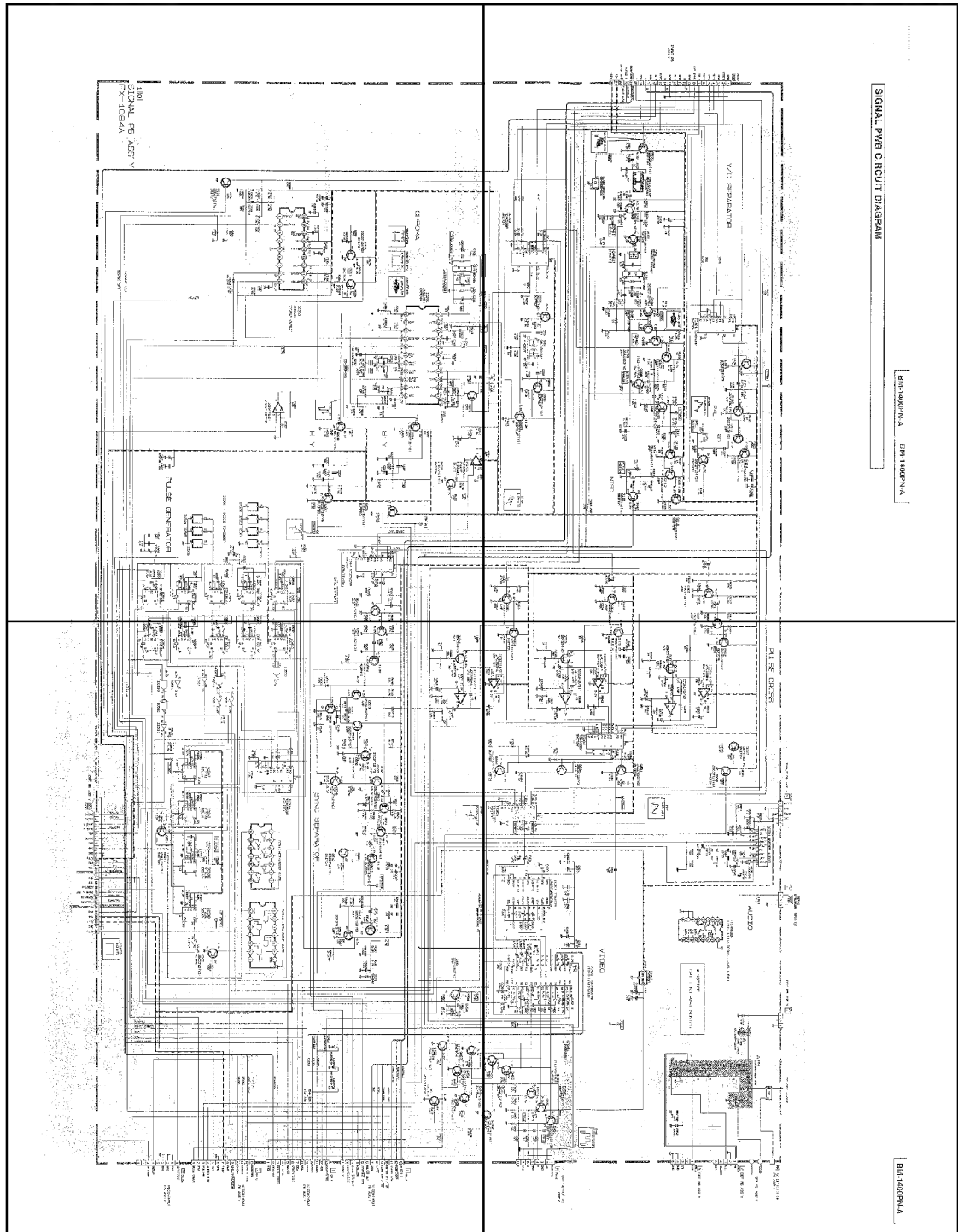
■ ADDRESS TABLE

SMACOL No	ADDRESS	SIDE	SMACOL No	ADDRESS	SIDE	SMACOL No	ADDRESS	SIDE	SMACOL No	ADDRESS	SIDE	SMACOL No	ADDRESS	SIDE	SMACOL No	ADDRESS	SIDE	SMACOL No	ADDRESS	SIDE
C101	G2	A	C452	B4	B	U110	F1	B	R104	G2	B	R258	U2	B	R514	U2	B			
C102	G2	B	C453	B4	B	U111	G1	B	R105	G2	B	R259	D2	B	R515	D2	B			
C103	G2	B	C454	B4	B	U112	G1	B	R106	G1	B	R260	D3	B	R516	D2	B			
C104	G2	B	C455	B3	A	U113	H1	B	R107	G1	B	R301	B1	B	R517	D2	B			
C105	G1	B	C456	C2	A	U114	H1	B	R108	G1	B	R302	B1	B	R518	D2	B			
C106	G1	B	C457	C2	A	U115	H1	B	R109	G2	B	R303	B1	B	R519	D2	B			
C107	G1	B	C458	C1	A	U116	F1	B	R110	G2	B	R304	B1	B	R520	D2	B			
C108	G1	B	C459	B5	A	U117	F1	B	R111	G2	B	R305	A1	B	R521	D2	B			
C109	G2	B	C460	B5	A	U118	G1	B	R112	G2	B	R306	A1	B	R522	D2	B			
C110	G1	B	C461	B4	A	U119	F3	B	R113	G2	B	R307	A1	B	R523	D2	B			
C111	F2	B	C462	B4	B	U120	F3	B	R114	G2	B	R308	A1	B	R524	D2	B			
C112	G2	B	C463	B4	A	U121	F3	B	R115	G2	B	R309	A2	B	R525	D2	B			
C113	G2	B	C464	B4	A	U122	E1	B	R116	G2	B	R310	B2	B	R526	D2	B			
C114	F1	A	C465	B4	A	U123	E1	B	R117	G2	B	R311	B2	B	R527	D2	B			
C115	G1	B	C466	C6	A	U124	D1	B	R118	G2	B	R312	A2	B	R528	D2	B			
C116	G1	B	C467	C6	B	U125	D1	B	R119	G2	B	R313	A2	B	R529	D2	B			
C117	G1	B	C468	B5	A	U126	D3	B	R120	F2	B	R314	A3	B	R530	D3	B			
C118	G1	A	C469	B5	B	U127	F2	B	R121	F2	B	R315	B1	B	R531	D3	B			
C119	G1	A	C470	C5	A	U128	F2	B	R122	F1	B	R316	B1	B	R532	D3	B			
C120	H1	A	C471	C5	A	U129	E3	B	R123	G2	B	R317	A1	B	R533	D3	B			
C121	H1	B	C501	C2	A	U130	D3	B	R124	F1	B	R318	B1	B	R534	D3	B			
C122	H1	A	C502	C2	B	U131	A1	B	R125	G2	B	R319	A2	B	R535	D3	B			
C123	H1	B	C503	C1	A	U132	A1	B	R126	F2	B	R320	A2	B	R536	D3	B			
C124	F2	B	C504	D2	A	U133	A2	B	R127	G2	B	R321	A2	B	R537	D3	B			
C125	G2	B	C505	D2	B	U134	A2	B	R128	F1	B	R322	A2	B	R538	D3	B			
C126	G2	B	C506	D2	A	U135	B1	B	R129	F1	B	R323	B1	B	R539	D2	B			
C202	F3	B	C507	D2	A	U136	C3	B	R130	F1	B	R324	B1	B	R540	D2	B			
C203	E2	B	C508	C1	B	U137	A2	B	R131	G1	B	R325	B1	B	R541	D3	B			
C204	E1	B	C509	D2	B	U138	A2	B	R132	G1	B	R326	B1	B	R542	D3	B			
C205	E1	B	C510	C3	B	U139	A2	B	R133	G1	B	R327	B1	B	R543	D3	B			
C206	E1	A	C511	D3	B	U140	A2	B	R134	H1	B	R328	B1	B	R544	D3	B			
C207	F1	A	C512	D2	B	U141	B2	B	R135	H1	B	R329	B1	B	R545	D3	B			
C208	F2	B	C513	C3	B	U142	B3	B	R136	G1	B	R330	B1	B	R546	D3	B			
C209	E2	B	C514	C2	B	U143	B3	B	R137	H1	B	R331	B1	B	R547	D3	B			
C210	E2	B	C515	D2	B	U144	B1	B	R138	H1	B	R332	B1	B	R548	D3	B			
C211	E2	B	C516	D2	B	U145	B1	B	R139	H1	B	R333	B1	B	R549	D3	B			
C212	E2	B	C517	D1	A	U146	B2	B	R140	H1	B	R334	B1	B	R550	D3	B			
C213	E2	B	C518	D6	B	U147	B2	B	R141	H1	B	R335	B1	B	R551	D3	B			
C214	E2	A	C519	C4	B	U148	B3	B	R142	H1	B	R336	B1	B	R552	D3	B			
C215	E2	A	C520	C4	B	U149	B3	B	R143	F1	B	R337	B1	B	R553	D3	B			
C216	E2	A	C521	D4	B	U150	B3	B	R144	F1	B	R338	B1	B	R554	D3	B			
C217	E2	B	C522	D4	B	U151	B3	B	R145	H1	B	R339	B1	B	R555	D3	B			
C218	E2	A	C523	C5	B	U152	B3	B	R146	F1	B	R340	B1	B	R556	D3	B			
C219	E2	A	C524	C5	B	U153	B3	B	R147	F2	B	R341	B1	B	R557	D3	B			
C220	E2	A	C525	C5	B	U154	B3	B	R148	F2	B	R342	B1	B	R558	D3	B			

※ SIDE : A=PARTS SIDE, B=PATTERN SIDE

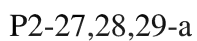
P2-27,28,29-a

P2-27,28,29-b

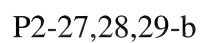


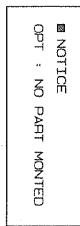
P2-27,28,29-c

P2-27,28,29-d



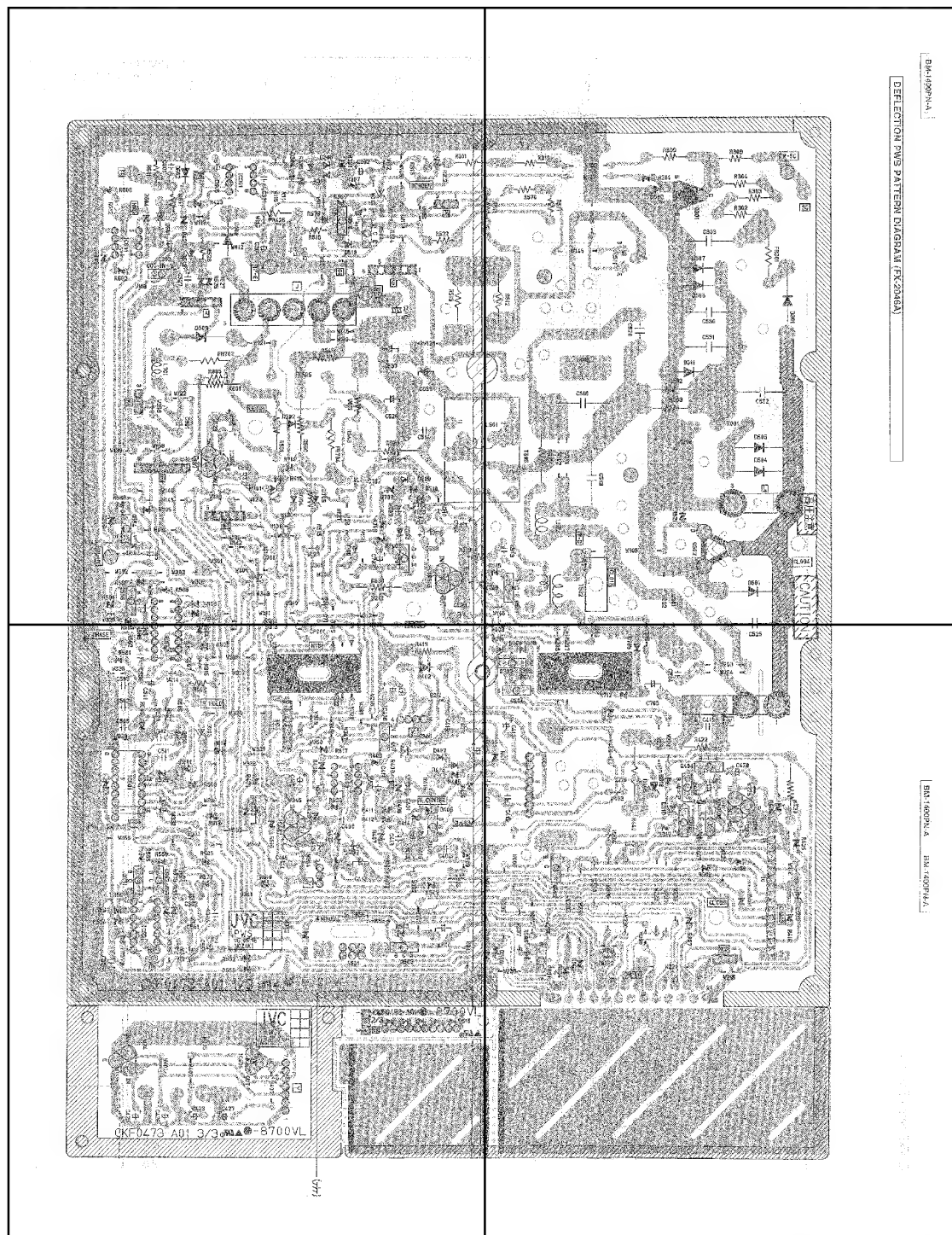
BM-1400PN-A	BM-1400PN-A





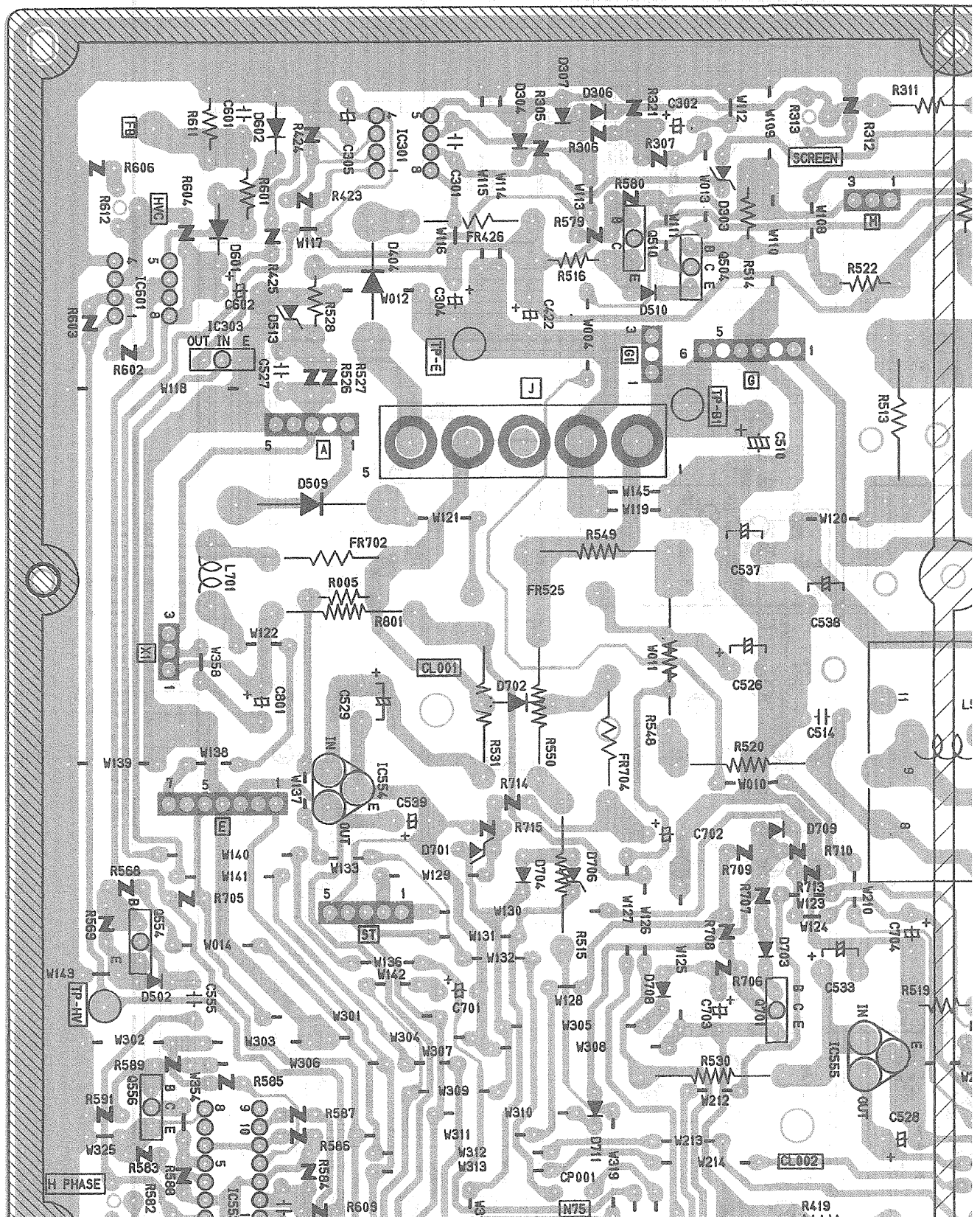
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P2-30,31,32-b

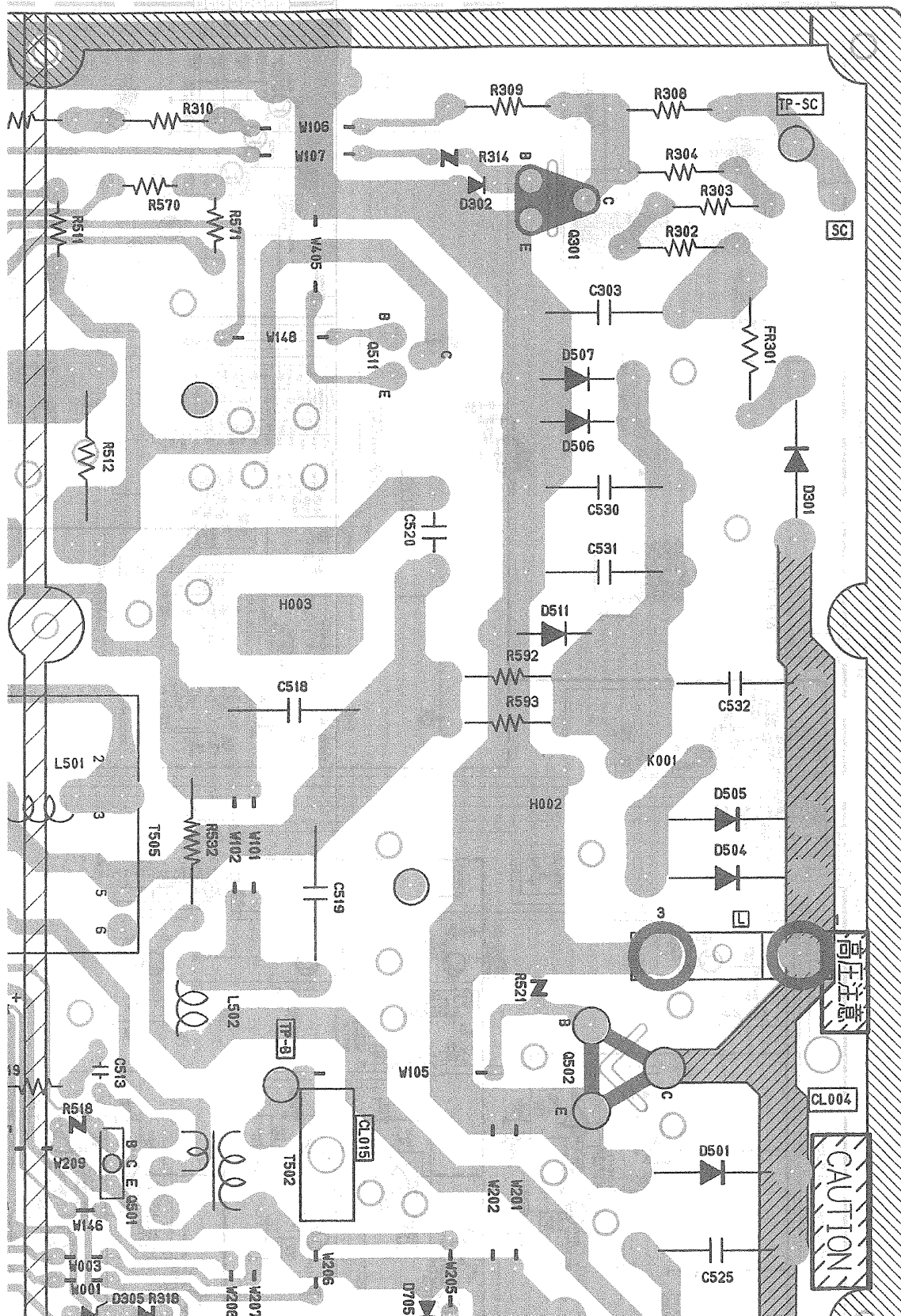


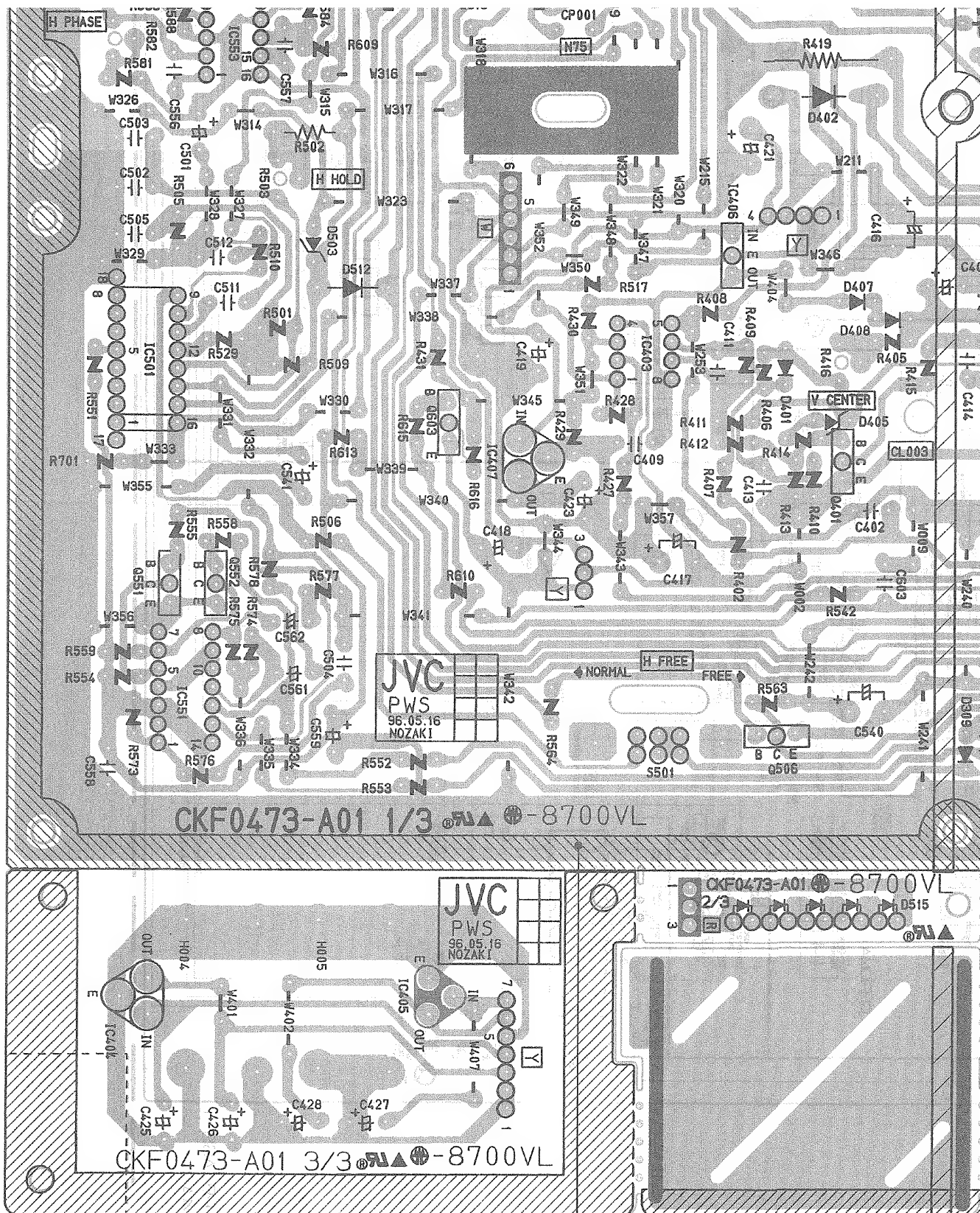
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P2-30,31,32-d

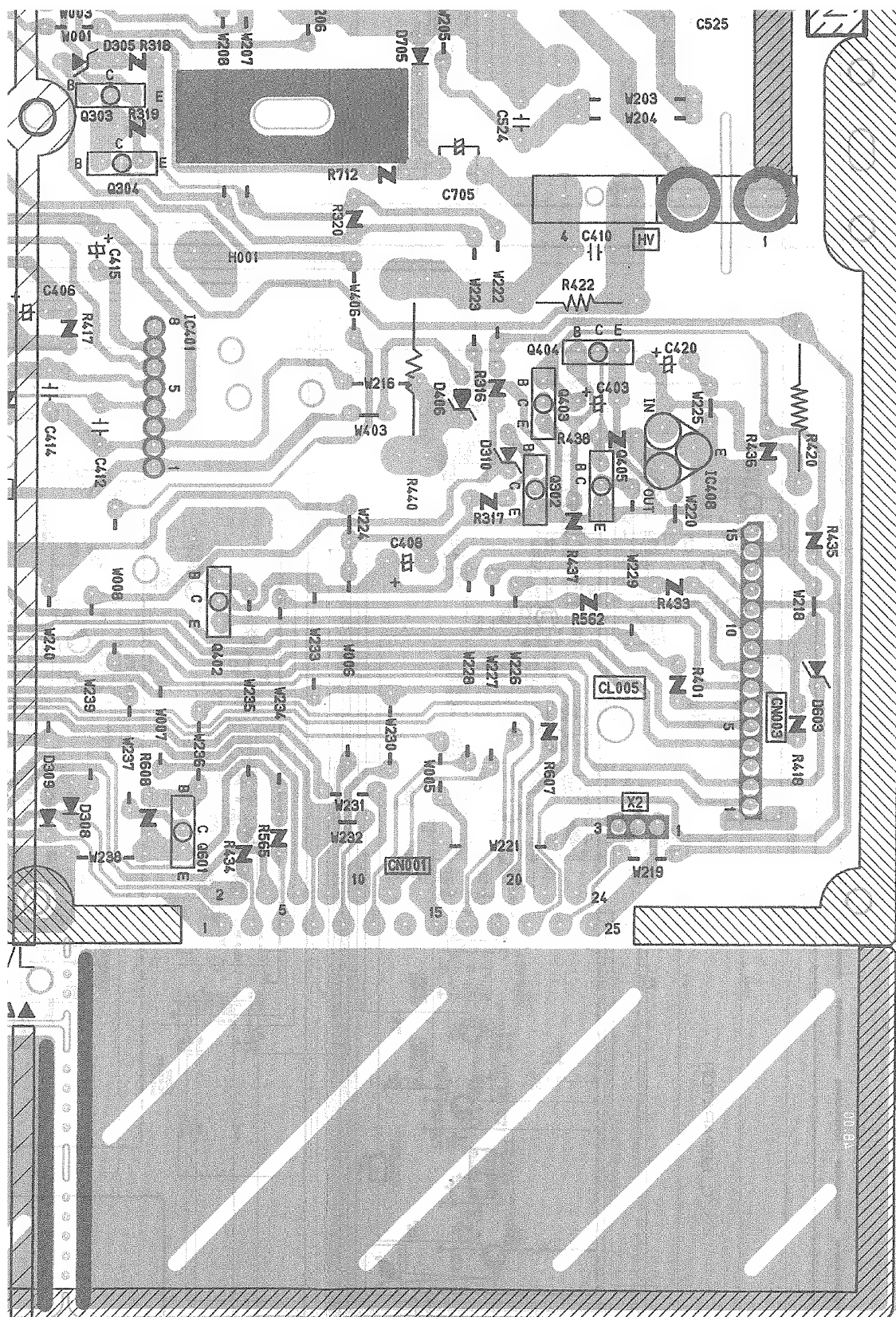


DEFLECTION PWB PATTERN DIAGRAM (FX-2046A)



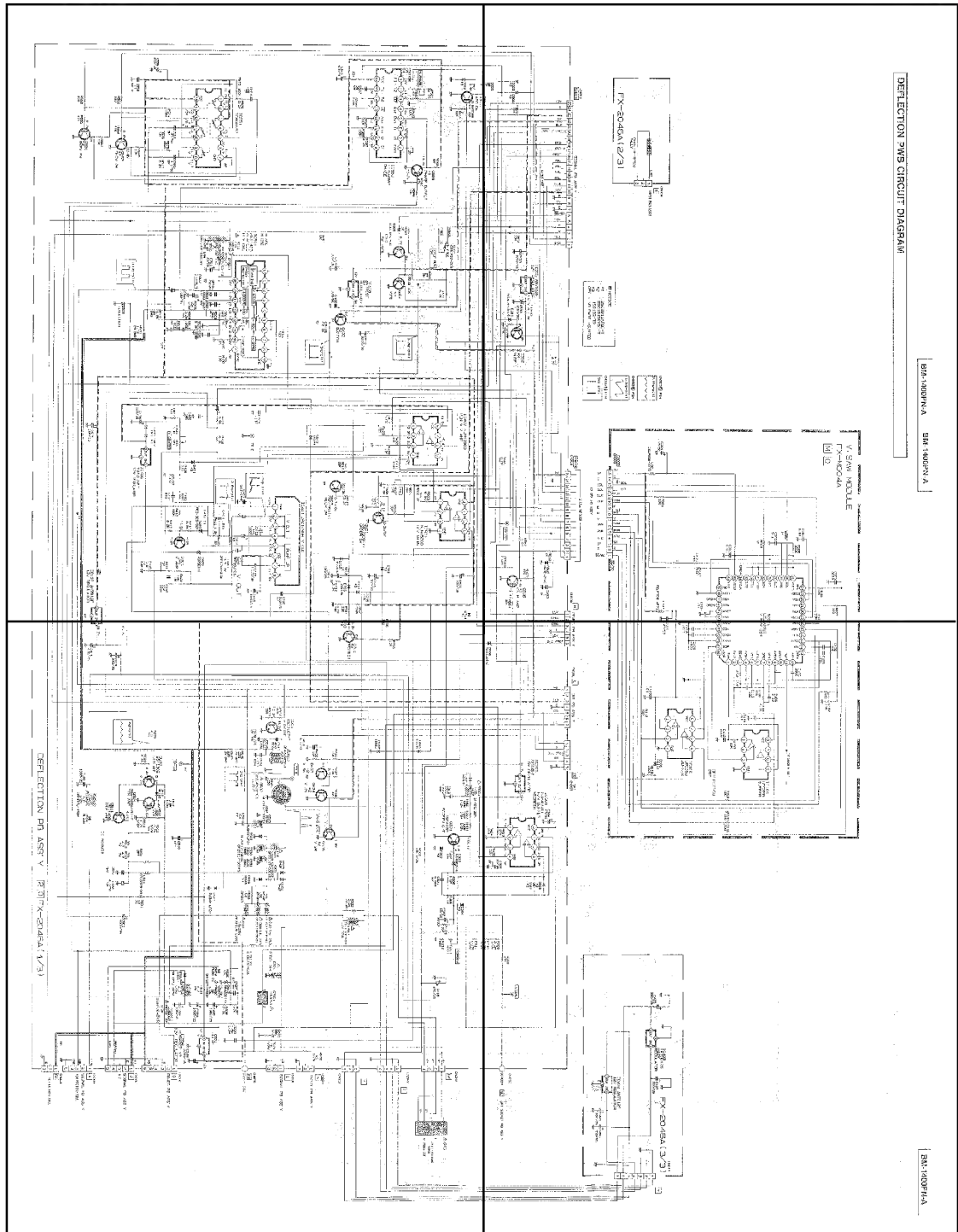


(77)



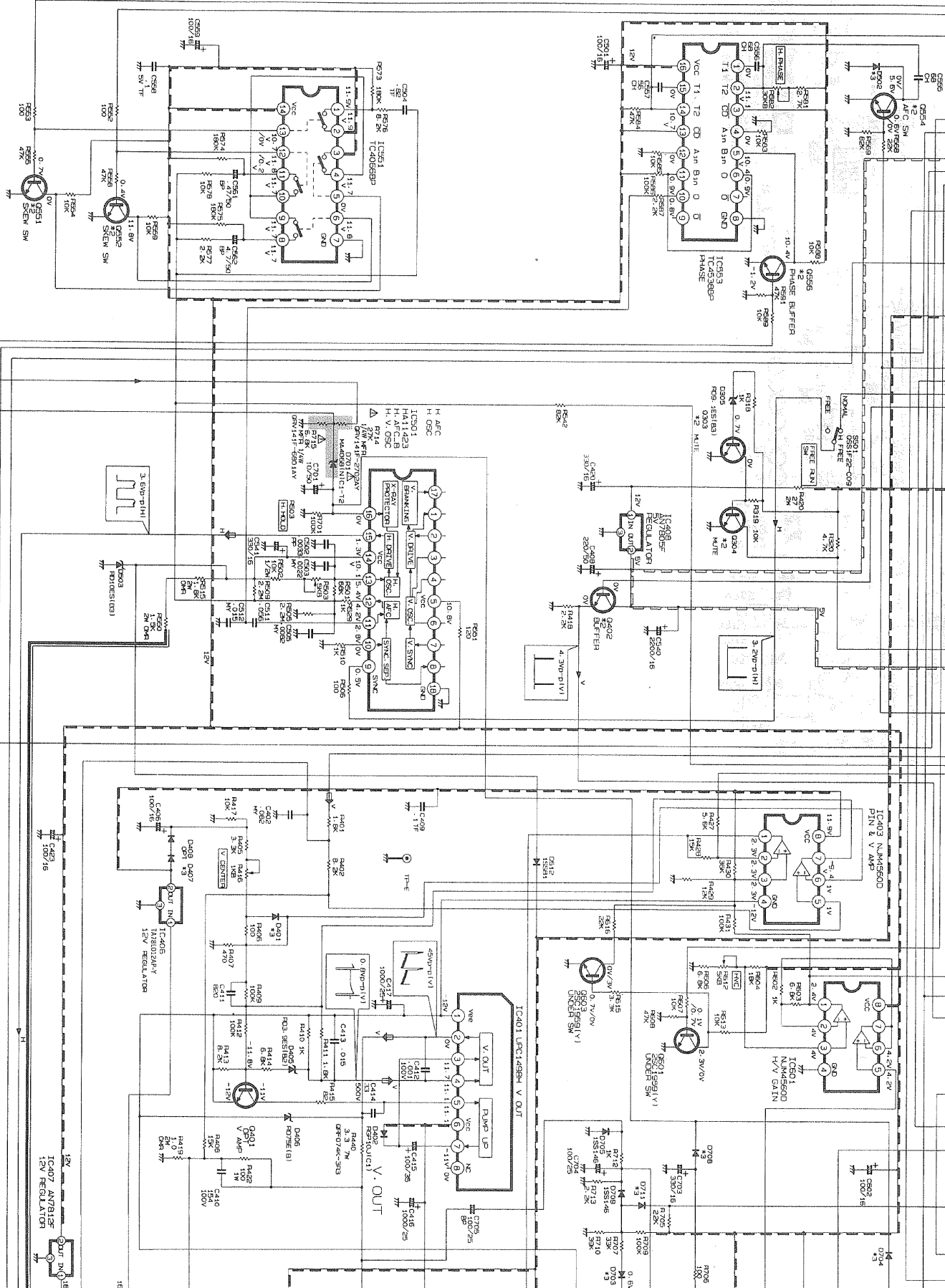
P2-33,34,35-a

P2-33,34,35-b

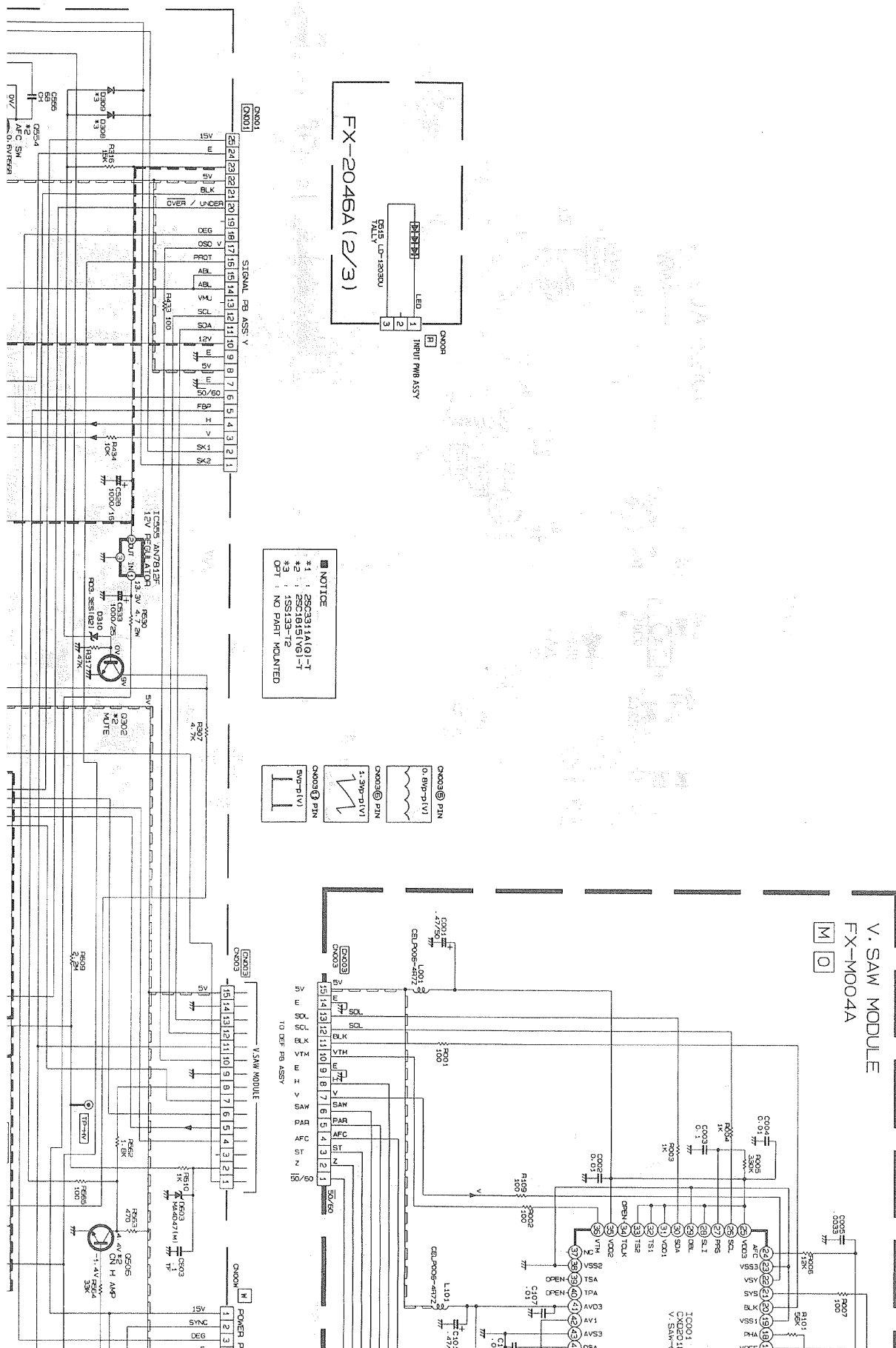


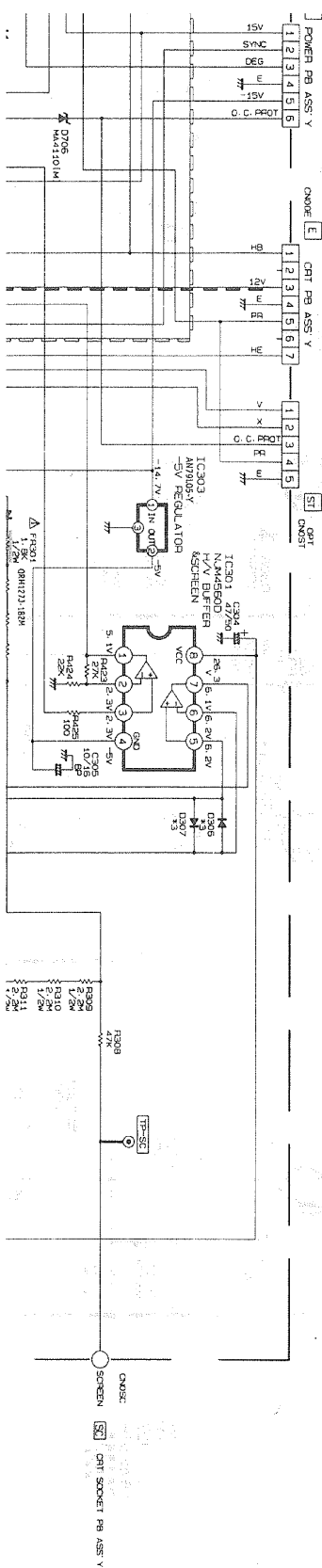
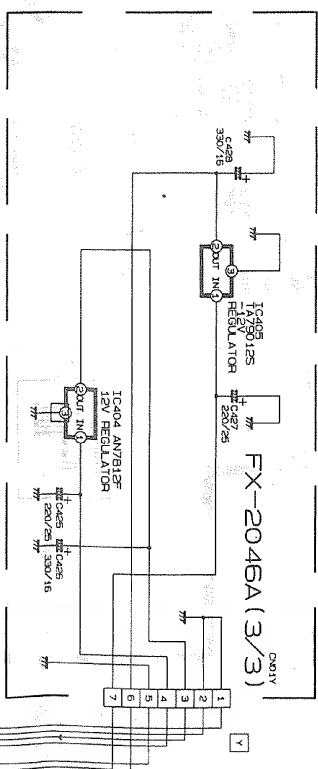
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P2-33,34,35-d



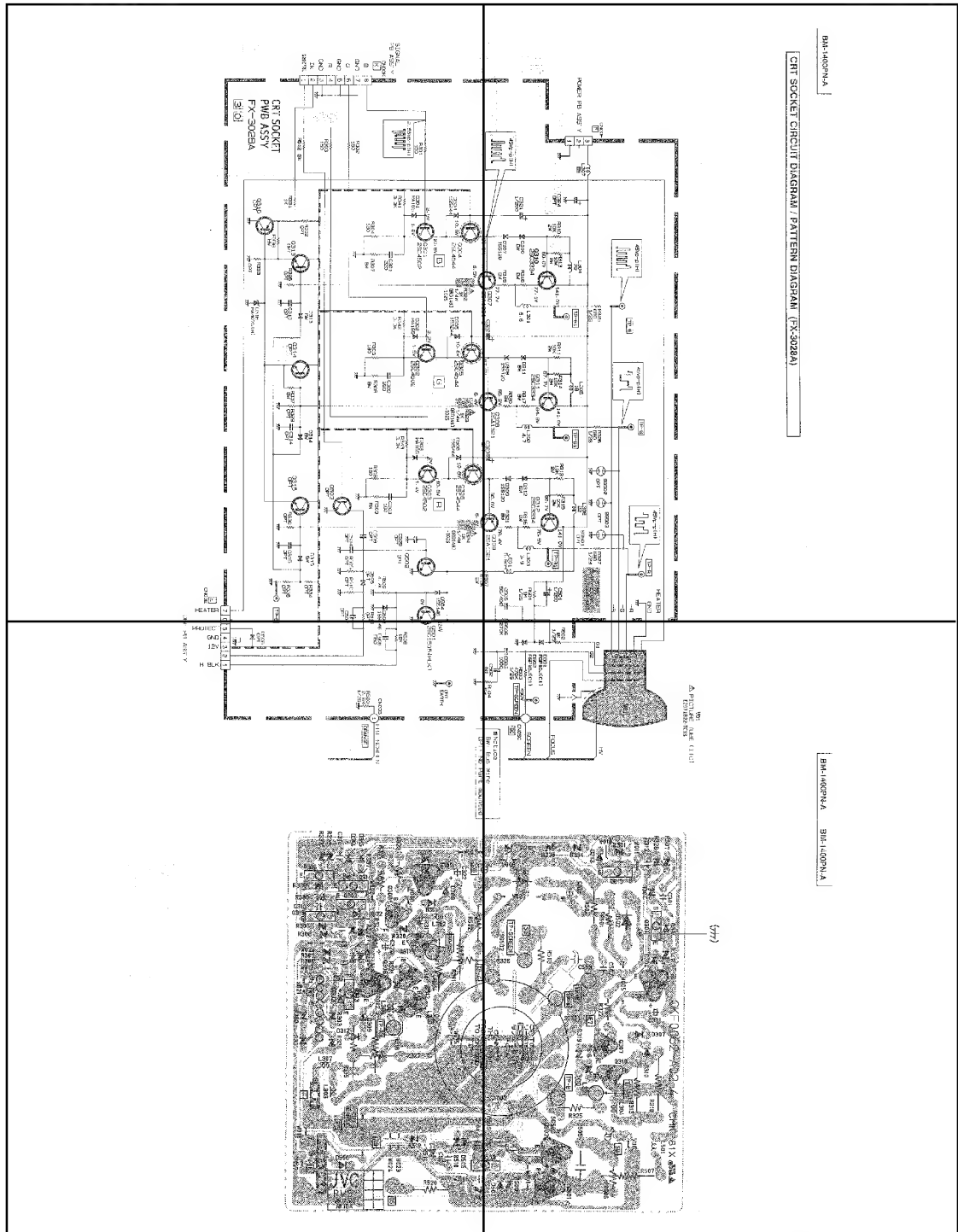
DEFLECTION PWB CIRCUIT DIAGRAM





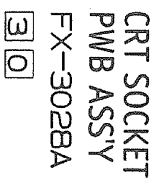
P2-36,37,38-a

P2-36,37,38-b

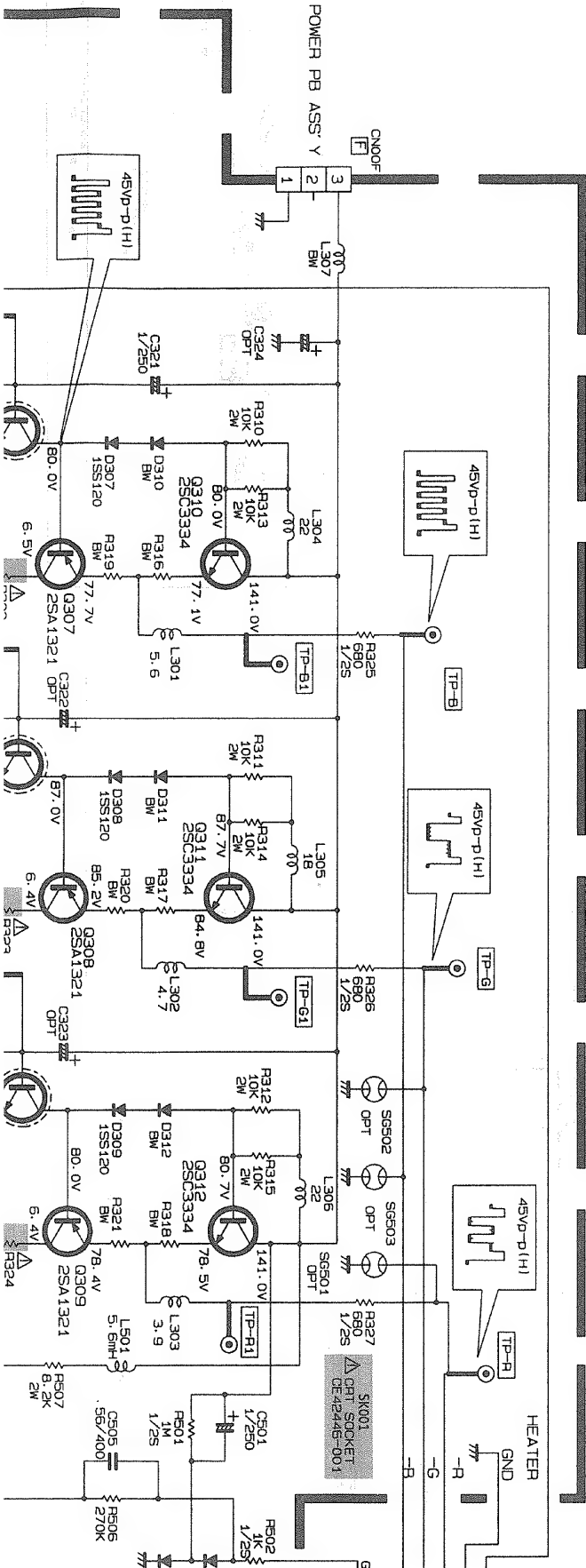


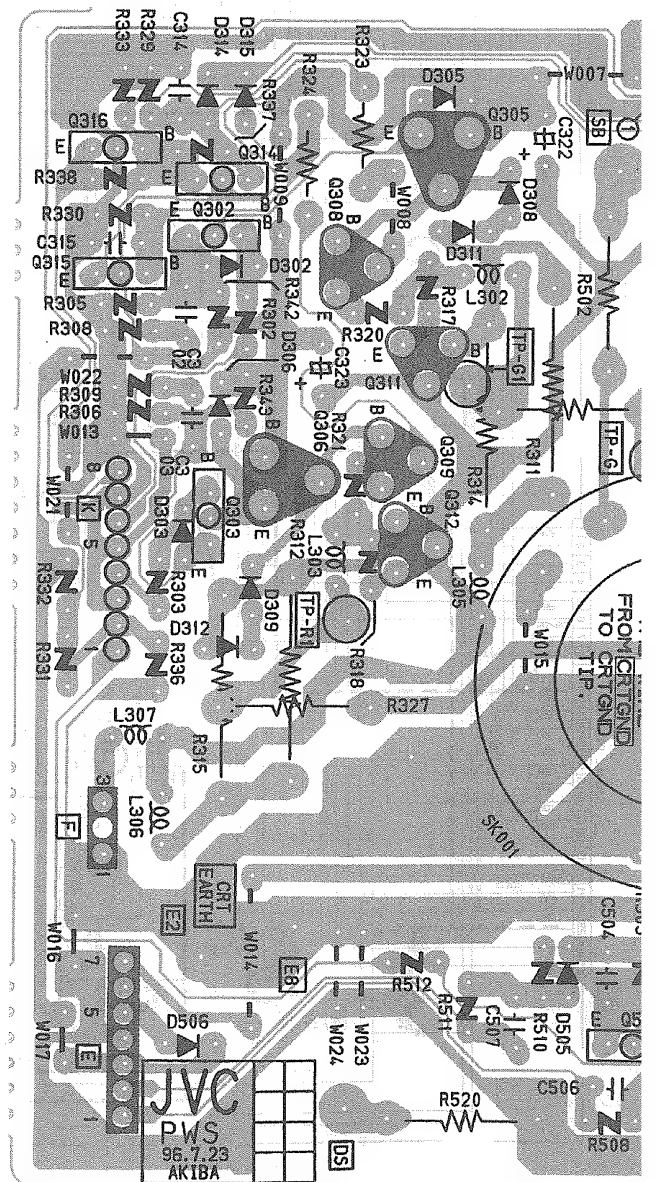
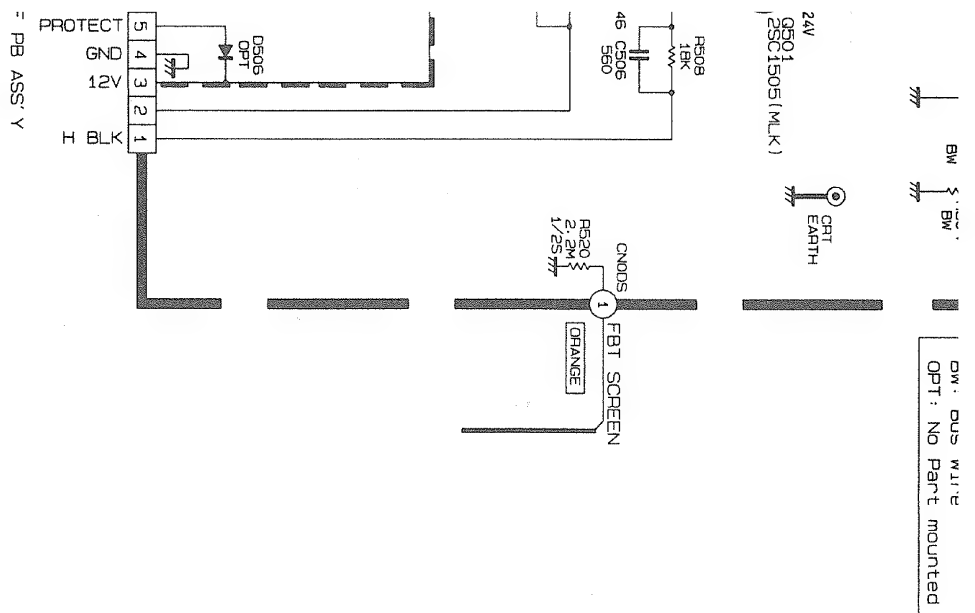
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P2-36,37,38-d

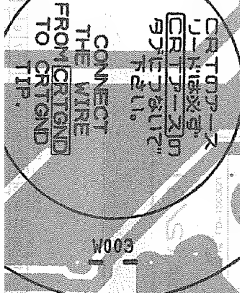
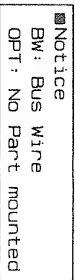


CRT SOCKET CIRCUIT DIAGRAM / PATTERN DIAGRAM (FX-3028A)





BM-1400PN-A



PARTS LIST

CAUTION

- The parts identified by the \triangle symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines — in the Parts No. columns will not be supplied .
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied .
- As a rule, the resistors and capacitors which are indicated as shown in "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board .

When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" .

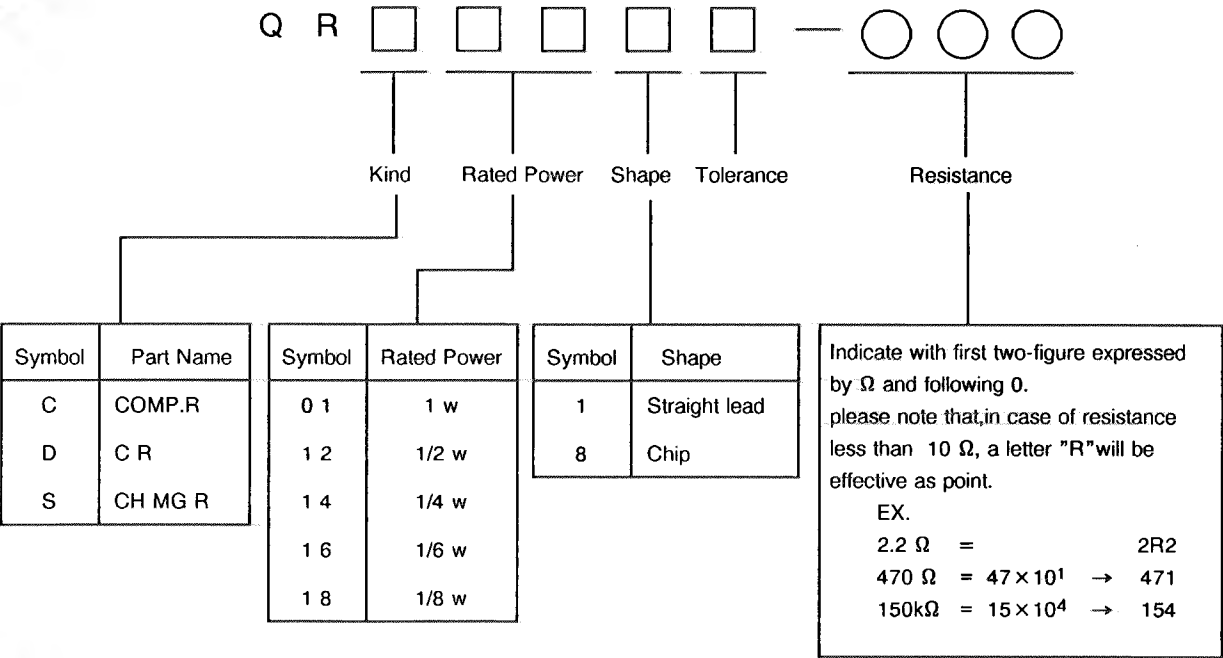
ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

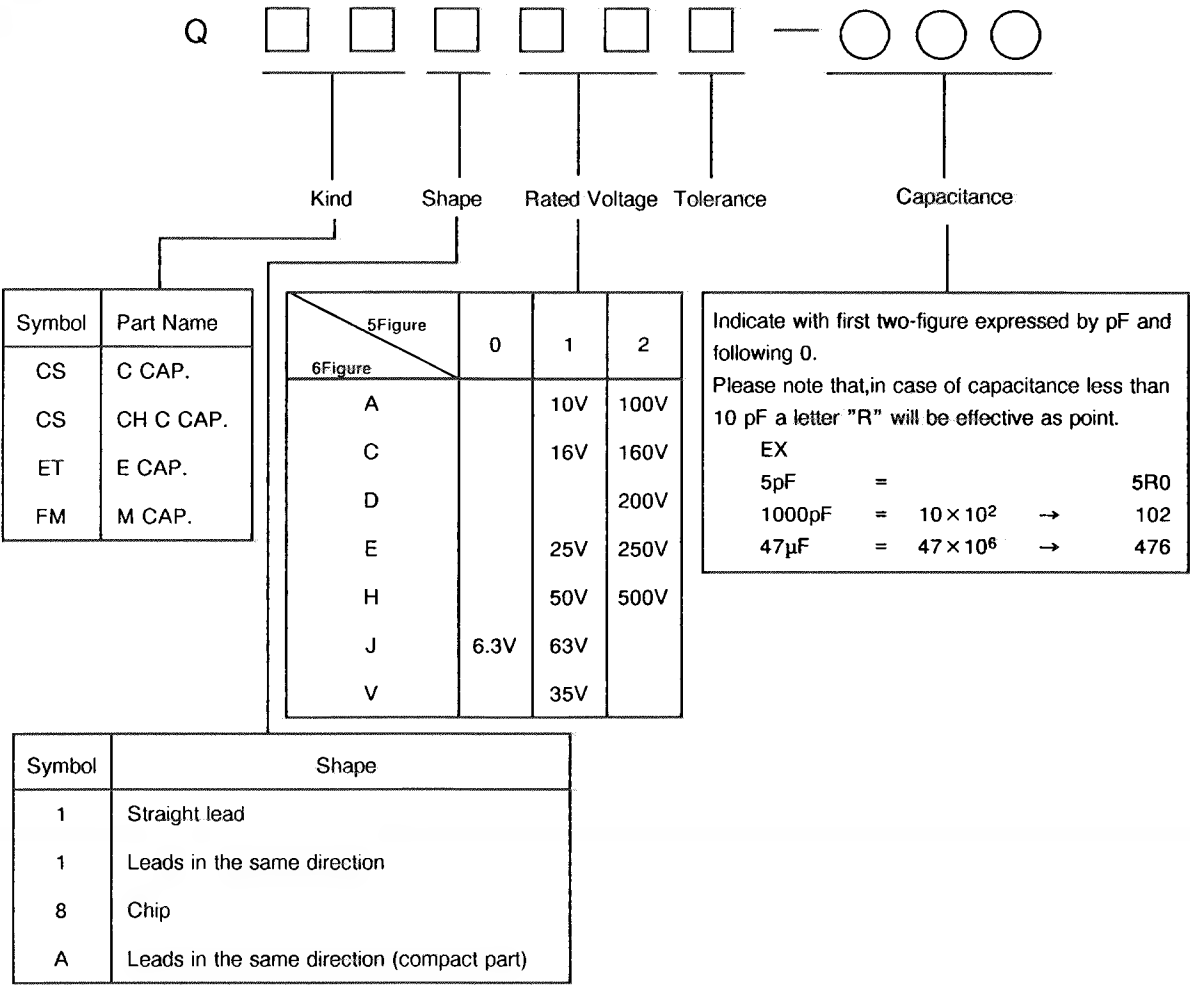
TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$	$\pm 30\%$	+30% - 10%	+50% - 10%	+80% - 20%	+100% - 0%

HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

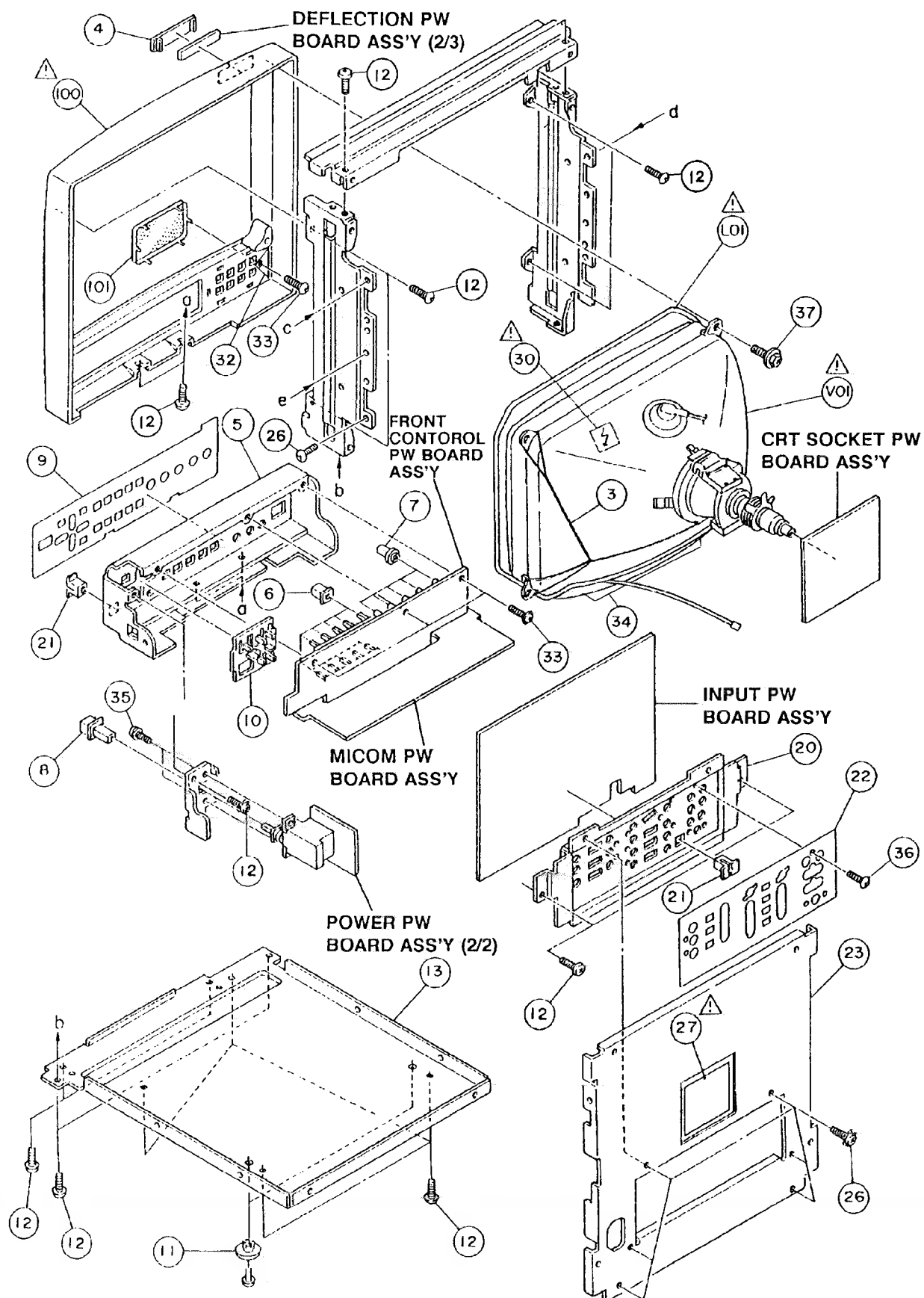
■ RESISTOR

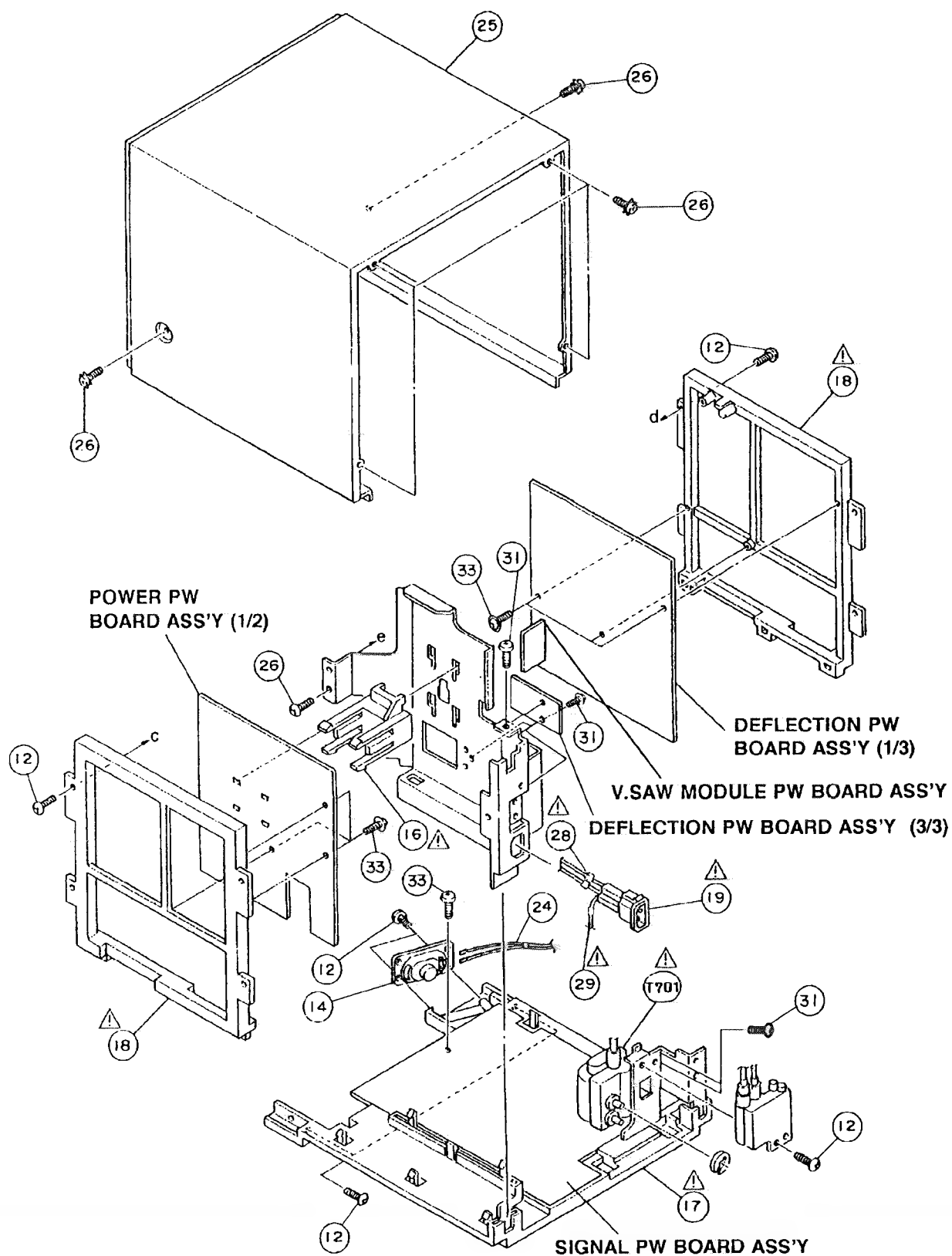


■ CAPACITOR



EXPLODED VIEW





EXPLODED VIEW PARTS LIST

△ Ref.No.	Part No.	Part Name	Description	Local
△ V01	E2971B22-TC18	ITC TUBE		
△ L01	CELD050-001	DEGAUSSING COIL		
△ T701	CJ27992-00B	FLYBACK TRANSF.		
3	CH30459-00C	BRAIDED ASSY		
4	CM44530-E01	TALLY PLATE		
5	CM22773-A01	CONTROL BKT		
6	CM46044-001	PUSH KNOB	× 10	
7	CM47853-005	VOLUME KNOB	× 5	
8	CM46115-C01	POWER KNOB		
9	CM35943-002	CONTROL SHEET		
10	CM35942-C01	CURSOL KNOB		
11	CM47686-00A	FOOT	× 2	
12	SBSF4012Z	T.SCREW	× 26	
13	CM12551-A01	BOTTOM COVER		
14	9050-03T	CONE SPEAKER	SP01	
△ 16	CM22752-001-V0	TRANSF HOLDER		
△ 17	CM12531-001-V0	CHASSIS BASE		
△ 18	CM12530-B01-V0	PB BASE	× 2	
△ 19	QMCB004-001	3P INLET		
20	CM35946-A01	TERMINAL PANEL		
21	CM48005-001	LINKAGE BUSHING	× 2	
22	CM35944-A02	TERMINAL SHEET		
23	CM12550-002	REAR PANEL		
24	CHGS0003-0E-G	S.P WIRE ASSY		
25	CM12535-001	TOP COVER		
26	CM44287-00C	ASSY SCREW	× 16	
△ 27	CM22867-021(R)	ROLL R LABEL		
△ 28	CHGY0032-0A-G	CONNECTOR ASSY		
△ 29	CHGY0033-0A-G	RECEP WIRE ASSY		
△ 30	CM48050-001	HV LABEL		
31	CM44287-00B	ASSY SCREW	× 6	
32	CM48065-001	EARTH PLATE		
33	GBSF3012Z	T.SCREW	× 10	
34	CM42321-007	SPONGE		
35	LPSP3008Z	ASSY SCREW	× 2	
36	SBSG3008M	T.SCREW	× 17	
37	CM42937-001	ASSY SCREW	× 4	
△ 100	CM12533-C0B-M0	FRONT PANEL ASSY	Included No.101	
101	CM47947-001	SPEAKER NET		

PRINTED WIRING BOARD PARTS LIST

SIGNAL PW BOARD ASS'Y (FX-1084A)

△ Ref.No.	Part No.	Part Name	Description	Local
VARIABLE RESISTOR				
R1107	QVPC611-202HZ	V R	2k Ω B(COMB1 LEVEL)	
R1117	QVPC611-501HZ	V R	500 Ω B(COMB2 LEVEL)	
R1120	QVPC611-202HZ	V R	2k Ω B(COMB2 PHASE)	
R1210	QVPC611-202HZ	V R	2k Ω B(DL AMP)	
CAPACITOR				
C1102-06	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1107	NCT03CH-121AY	CHIP CAP.	120 p F 50V	J
C1108	NCT03CH-470AY	CHIP CAP.	47 p F 50V	J
C1109-10	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1111	NCT03CH-560AY	CHIP CAP.	56 p F 50V	J
C1112-13	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1114	QEN61CM-476Z	BP E CAP.	47 μ F 16V	M
C1115	NCT03CH-120AY	CHIP CAP.	12 p F 50V	J
C1116	NCT03CH-560AY	CHIP CAP.	56 p F 50V	J
C1117	QAT3110-300A	TRIM CAP.	30 p F 100V	
C1118	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1122	QAT3110-300A	TRIM CAP.	30 p F 100V	
C1123	NCT03CH-101AY	CHIP CAP.	100 p F 50V	J
C1124	NCB21HK-822AY	CHIP CAP.	8200 p F 50V	K
C1201-02	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1203	NCT03CH-680AY	CHIP CAP.	68 p F 50V	J
C1204	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1205	NCT03CH-820AY	CHIP CAP.	82 p F 50V	J
C1206-07	QAT3110-450A	TRIM CAP.	45 p F 100V	
C1208	NCT03CH-121AY	CHIP CAP.	120 p F 50V	J
C1209	QAT3110-450A	TRIM CAP.	45 p F 100V	
C1210	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1211	NCT03CH-221AY	CHIP CAP.	220 p F 50V	J
C1212	NCB21HK-273AY	CHIP CAP.	0.027 μ F 50V	K
C1213	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1217	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1218	QEN61CM-106Z	BP E CAP.	10 μ F 16V	M
C1219	QFLC1HJ-153MZ	M CAP.	0.015 μ F 50V	J
C1220	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1221	NCT03CH-270AY	CHIP CAP.	27 p F 50V	J
C1222	QAT3110-300A	TRIM CAP.	30 p F 100V	
C1223	NCT03CH-270AY	CHIP CAP.	27 p F 50V	J
C1224	QAT3110-300A	TRIM CAP.	30 p F 100V	
C1225	NCT03CH-470AY	CHIP CAP.	47 p F 50V	J
C1226	NCT03CH-390AY	CHIP CAP.	39 p F 50V	J
C1227	NCT03CH-6R0AY	CHIP CAP.	6.0 p F 50V	J
C1228	NCT03CH-181AY	CHIP CAP.	180 p F 50V	J
C1229	NCT03CH-390AY	CHIP CAP.	39 p F 50V	J
C1230	NCT03CH-6R0AY	CHIP CAP.	6.0 p F 50V	J
C1231	NCT03CH-181AY	CHIP CAP.	180 p F 50V	J
C1234	NCB21HK-473AY	CHIP CAP.	0.047 μ F 50V	K
C1235	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1237	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1238	NCB21HK-223AY	CHIP CAP.	0.022 μ F 50V	K
C1239	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1240	NCB21HK-393AY	CHIP CAP.	0.039 μ F 50V	K
C1302	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1306	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1309	NCT03CH-8R0AY	CHIP CAP.	8.0 p F 50V	J
C1332	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1336	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1362	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1366	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1382	NCB21HK-473AY	CHIP CAP.	0.047 μ F 50V	K
C1383	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1402	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K

△ Symbol No.	Part No.	Part Name	Description	Local
C A P A C I T O R				
C1403	QEN61HM-105Z	BP E CAP.	1 μ F 50V	M
C1406-07	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1410	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1452	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1453-54	NCB21HK-473AY	CHIP CAP.	0.047 μ F 50V	K
C1456-58	QEN61HM-105Z	BP E CAP.	1 μ F 50V	M
C1461	QFV71HJ-334MZ	TF CAP.	0.33 μ F 50V	J
C1462	NCB21HK-102AY	CHIP CAP.	1000 p F 50V	K
C1463-65	QFV71HJ-224MZ	TF CAP.	0.22 μ F 50V	J
C1467	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1469	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1502	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1503	QEN61CM-476Z	BP E CAP.	47 μ F 16V	M
C1504	QEN61HM-105Z	BP E CAP.	1 μ F 50V	M
C1505	NCB21HK-222AY	CHIP CAP.	2200 p F 50V	K
C1508-09	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1511	NCB21HK-222AY	CHIP CAP.	2200 p F 50V	K
C1512	NCB21HK-102AY	CHIP CAP.	1000 p F 50V	K
C1513	NCT03CH-101AY	CHIP CAP.	100 p F 50V	J
C1516	NCT03CH-181AY	CHIP CAP.	180 p F 50V	J
C1517	NCT03CH-151AY	CHIP CAP.	150 p F 50V	J
C1552-54	NCB21HK-473AY	CHIP CAP.	0.047 μ F 50V	K
C1555	NCT03CH-391AY	CHIP CAP.	390 p F 50V	J
C1556	NCT03CH-331AY	CHIP CAP.	330 p F 50V	J
C1557-58	NCB21HK-222AY	CHIP CAP.	2200 p F 50V	K
C1559	NCT03CH-5R0AY	CHIP CAP.	5 p F 50V	J
C1560	QAT3110-450A	TRIM.CAP.	45 p F 100V	
C1561	NCT03CH-680AY	CHIP CAP.	68 p F 50V	J
C1562	NCT03CH-470AY	CHIP CAP.	47 p F 50V	J
C1563	NCT03CH-680AY	CHIP CAP.	68 p F 50V	J
C1564	NCT03CH-121AY	CHIP CAP.	120 p F 50V	J
C1567	QFP31HJ-153SZ	PP CAP.	0.015 μ F 50V	J
C1568	NCB21HK-222AY	CHIP CAP.	2200 p F 50V	K
C1571	NCB21HK-472AY	CHIP CAP.	4700 p F 50V	K
C1601	QEHC1CM-107MZ	E CAP.	100 μ F 16V	M
C1602	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C1603	QEHC1HM-105MZ	E CAP.	1 μ F 50V	M
C1605	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1607	QEHC1CM-227MZ	E CAP.	220 μ F 16V	M
C1610	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1611	NCB21HK-333AY	CHIP CAP.	0.033 μ F 50V	K
C1612	QEHC1HM-475MZ	E CAP.	4.7 μ F 50V	M
C1702	QFLC1HK-473MZ	M CAP.	0.047 μ F 50V	K
△ C1703	QFZ0117-1001S	MPP CAP.	1000 p F 2000V \pm 2.5%	
T R A N S F O R M E R				
T1101	CE41072-001	B.PASS TRANSF.		
T1102	CE40176-001	DL P.TRANSF.		
T1201	CELT034-002	B.PASS TRANSF.		
C O I L				
L1101	CELP026-100Z	PEAKING COIL	10 μ H	
L1102	CELP026-150Z	PEAKING COIL	15 μ H	
L1103	CELP026-5R6Z	PEAKING COIL	5.6 μ H	
L1104	CELP026-270Z	PEAKING COIL	27 μ H	
L1201-02	CELP026-8R2Z	PEAKING COIL	8.2 μ H	
L1203	CELP026-390Z	PEAKING COIL	39 μ H	
L1204	CELP026-4R7Z	PEAKING COIL	4.7 μ H	
L1206-07	CELP026-820Z	PEAKING COIL	82 μ H	
L1601	CELP026-4R7Z	PEAKING COIL	4.7 μ H	
D I O D E				
D1101	MA151K-X	DIODE		
D1201-03	MA151K-X	DIODE		
D1451-56	MA3082(M)-X	CHIP ZENER DIODE		
D1501	MA151K-X	DIODE		
D1502	MA3047(L)-X	CHIP ZENER DIODE		

Symbol No.	Part No.	Part Name	Description	Local
D I O D E				
D1702	1SS81-T5	SI.DIODE		
T R A N S I S T O R				
Q1101-05	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1106-07	2SA1162(YG)-X	CHIP TRANSISTOR		
Q1108-15	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1116-17	2SA1162(YG)-X	CHIP TRANSISTOR		
Q1118	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1201-08	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1210	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1212	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1301-02	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1303	2SK374(Q)-X	F.E.T.		
Q1304-06	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1307	2SA1162(YG)-X	CHIP TRANSISTOR		
Q1308	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1331-32	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1333	2SK374(Q)-X	F.E.T.		
Q1334	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1361-62	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1363	2SK374(Q)-X	F.E.T.		
Q1364	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1451-53	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1454	2SA1162(YG)-X	CHIP TRANSISTOR		
Q1455-62	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1501	2SA1162(YG)-X	CHIP TRANSISTOR		
Q1502-05	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1506	2SA1162(YG)-X	CHIP TRANSISTOR		
Q1507-09	2SC2712(YG)-X	CHIP TRANSISTOR		
Q1510	2SA1162(YG)-X	CHIP TRANSISTOR		
Q1511-15	2SC2712(YG)-X	CHIP TRANSISTOR		
I C				
IC1101	TC4053BP	I.C(DIGI-MOS)		
IC1201	AN5625N	I.C(MONO-ANA)		
IC1202	TC4053BP	I.C(DIGI-MOS)		
IC1203	AN5640	I.C(MONO-ANA)		
IC1204	UPC358HA	I.C(MONO-ANA)		
IC1301-03	UPC358HA	I.C(MONO-ANA)		
IC1304-05	TC4053BP	I.C(DIGI-MOS)		
IC1401	TDA4672	I.C(MONO-ANA)		
IC1402	TDA4680/V6	I.C(DIGI-OTHER)		
IC1403	AN7808	I.C.		
IC1501	TC4053BP	I.C(DIGI-MOS)		
IC1502-08	TC4538BP	I.C(DIGI-MOS)		
IC1509	TC4053BP	I.C(DIGI-MOS)		
IC1510	HD74LS00P	I.C(DIGI-OTHER)		
IC1511	HD74LS05P	I.C(DIGI-OTHER)		
IC1601	AN5265	I.C.		
O T H E R S				
CN1002	CHA401N-25P-J	HQF CONNECTOR		
DL1101	CE41577-002	DELAY LINE		
DL1102	CE40959-001	DELAY LINE		
DL1201	CE41489-001	DELAY LINE(1H)		
X1201	CE40668-001	CRYSTAL		
X1202	CE41953-001	CRYSTAL		

DEFLECTION PW BOARD ASS'Y (FX-2046A)

△ Symbol No.	Part No.	Part Name	Description	Local
VARIABLE RESISTOR				
R2313	QVPC611-503HZ	V R	50k Ω B(SCREEN)	
R2416	QVPC611-102HZ	V R	1k Ω B(V.CENTER)	
R2503	QVPC611-502HZ	V R	5k Ω B(H.HOLD)	
R2582	QVPC611-303HZ	V R	30k Ω B(H.PHASE)	
R2612	QVPC611-502HZ	V R	5k Ω B(HVC)	
RESISTOR				
R2419	QRX029J-1R0	MF R	1.0 Ω 2W J	
R2420	QRG029J-270	OM R	27 Ω 2W J	
R2422	QRG019J-101S	OM R	100 Ω 1W J	
R2440	QRF074K-3R3	UNF R	3.3 Ω 7W K	
R2512-13	QRF074K-4R7	UNF R	4.7 Ω 7W K	
R2515	QRG029J-182	OM R	1.8k Ω 2W J	
R2520	QRG029J-221	OM R	220 Ω 2W J	
R2530-31	QRX029J-4R7	MF R	4.7 Ω 2W J	
R2532	QRG029J-222	OM R	2.2k Ω 2W J	
R2548-49	QRG029J-221	OM R	220 Ω 2W J	
R2550	QRG029J-152	OM R	1.5k Ω 2W J	
R2592	QRX029J-R56A	MF R	0.56 Ω 2W J	
R2593	QRX029J-R82A	MF R	0.82 Ω 2W J	
△ R2714	QRV141F-2702AY	MF R	27k Ω 1/4W F	
△ R2715	QRV141F-6801AY	MF R	6.8k Ω 1/4W F	
R2801	QRG029J-100	OM R	10 Ω 2W J	
CAPACITOR				
C2301	QFLC1HK-102MZ	M CAP.	1000 p F 50V K	
C2302	QEHC1HM-106MZ	E CAP.	10 μ F 50V M	
C2303	QFZ0117-4701S	MPP CAP.	4700 p F 2000V ± 2.5%	
C2304	QEHC1HM-476MZ	E CAP.	47 μ F 50V M	
C2305	QEN61CM-106Z	BP E CAP.	10 μ F 16V M	
C2402	QFLC1HK-823MZ	M CAP.	0.082 μ F 50V K	
C2403	QEHC1HM-475MZ	E CAP.	4.7 μ F 50V M	
C2406	QEHC1CM-107MZ	E CAP.	100 μ F 16V M	
C2408	QEHC1HM-227MZ	E CAP.	220 μ F 50V M	
C2409	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V J	
C2410	QFLB2AK-154M	M CAP.	0.15 μ F 100V K	
C2412	QFLC2AJ-102MZ	M CAP.	1000 p F 100V J	
C2413	QFLC1HK-153MZ	M CAP.	0.015 μ F 50V K	
C2415	QEHC1VM-107MZ	E CAP.	100 μ F 35V M	
C2416-17	QEHC1EM-108MZ	E CAP.	1000 μ F 25V M	
C2418	QEHC1EM-477MZ	E CAP.	470 μ F 25V M	
C2419	QEHC1EM-227MZ	E CAP.	220 μ F 25V M	
C2420	QEHC1CM-337MZ	E CAP.	330 μ F 16V M	
C2421	QEHC1EM-477MZ	E CAP.	470 μ F 25V M	
C2422	QEHB1VM-108M	E CAP.	1000 μ F 35V M	
C2423	QEHC1CM-107MZ	E CAP.	100 μ F 16V M	
C2425	QEHC1EM-227MZ	E CAP.	220 μ F 25V M	
C2426	QEHC1CM-337MZ	E CAP.	330 μ F 16V M	
C2427	QEHC1EM-227MZ	E CAP.	220 μ F 25V M	
C2428	QEHC1CM-337MZ	E CAP.	330 μ F 16V M	
C2502	QFP31HJ-332SZ	PP CAP.	3300 p F 50V J	
C2503	QFLC1HJ-222MZ	M CAP.	2200 p F 50V J	
C2504	QFV71HJ-824MZ	TF CAP.	0.82 μ F 50V J	
C2505	QFLC1HJ-822MZ	M CAP.	8200 p F 50V J	
C2511	QFLC1HK-563MZ	M CAP.	0.056 μ F 50V K	
C2512	QFLC1HK-153MZ	M CAP.	0.015 μ F 50V K	
C2514	QFLC2AK-104MZ	M CAP.	0.1 μ F 50V K	
△ C2518	QFZ0119-155S	MPP CAP.	1.5 μ F 200V ± 3%	
△ C2519	QFZ0119-155S	MPP CAP.	1.5 μ F 200V ± 3%	
△ C2520	QFZ0119-304S	MPP CAP.	0.3 μ F 200V ± 3%	
C2524	QFLC1HK-104MZ	M CAP.	0.1 μ F 50V K	
△ C2525	QFZ0117-1801S	MPP CAP.	1800 p F 2000V ± 2.5%	
C2526	QEHC1EM-108MZ	E CAP.	1000 μ F 25V M	
C2527	QFLC1HK-473MZ	M CAP.	0.047 μ F 50V K	
C2528	QEHC1CM-108MZ	E CAP.	1000 μ F 16V M	

Symbol No.	Part No.	Part Name	Description	Local
C A P A C I T O R				
	C2529	QEHC1EM-108MZ	E CAP.	1000 μ F 25V M
△	C2530	QFZ0117-7001S	MPP CAP.	7000 p F 2000V \pm 2.5%
△	C2531	QFZ0117-3001S	MPP CAP.	3000 p F 2000V \pm 2.5%
△	C2532	QFZ0117-9001S	MPP CAP.	9000 p F 1.4kVH \pm 2.5%
	C2533	QEHC1EM-108MZ	E CAP.	1000 μ F 25V M
	C2537-38	QEZ0195-475MZ	E CAP.	4.7 μ F 50V M
	C2539	QEHB1CM-228M	E CAP.	2200 μ F 16V M
	C2555-56	QCT25CH-680Z	C CAP.	68 p F 50V J
	C2557	QCT25CH-560Z	C CAP.	56 p F 50V J
	C2558	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V J
	C2561	QEN61HM-474Z	BP E CAP.	0.47 μ F 50V M
	C2562	QEN61HM-475Z	BP E CAP.	4.7 μ F 50V M
	C2601	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V J
	C2602	QEHC1CM-107MZ	E CAP.	100 μ F 16V M
	C2603	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V J
	C2701	QETC1HM-106Z	E CAP.	10 μ F 50V M
	C2702	QEHC1HM-107MZ	E CAP.	100 μ F 50V M
	C2703	QEHC1CM-337MZ	E CAP.	330 μ F 16V M
	C2704	QEHC1EM-107MZ	E CAP.	100 μ F 25V M
	C2705	QEN61EM-107Z	BP E CAP.	100 μ F 25V M
	C2801	QEHB1VM-108M	E CAP.	1000 μ F 35V M
T R A N S F O R M E R				
△	T2502	CE42034-001	H.DRIVE TRANSF.	
	T2505	CE41916-00B	CHOPPER TRANSF	
C O I L				
△	L2502	CELL008-001	LINIRITY COIL	
	L2701	CJ30030-028	HEATER CHOKE	
D I O D E				
	D2301	RU4DS-C1	SI.DIODE	
	D2302	1SS133-T2	SI.DIODE	
	D2303	MA4062(M)-T2	ZENER DIODE	
	D2304	1SS133-T2	SI.DIODE	
	D2305	RD9.1ES(B3)-T2	ZENER DIODE	
	D2306-09	1SS133-T2	SI.DIODE	
	D2310	RD3.3ES(B2)-T2	ZENER DIODE	
	D2401	1SS133-T2	SI.DIODE	
	D2402	RGP10J(C1)-T3	SI.DIODE	
	D2404	RU30-C1	SI.DIODE	
	D2405	RD3.9ES(B2)-T2	ZENER DIODE	
	D2406	RD75E(B)-T5	ZENER DIODE	
	D2407	1SS133-T2	SI.DIODE	
△	D2501	ERD07-15-L	SI.DIODE	
	D2502	1SS133-T2	SI.DIODE	
	D2503	RD10ES(B3)-T2	ZENER DIODE	
	D2504-05	RH4F-C1	SI.DIODE	
	D2506-07	RU3AM-LFC4	SI.DIODE	
	D2509	RU4AM-C1	SI.DIODE	
	D2510	MA165-T2	SI.DIODE	
	D2511	RU3AM-LFC4	SI.DIODE	
	D2512	1SS81-T2	SI.DIODE	
	D2513	MA4220(M)-T2	ZENER DIODE	
	D2515	LD-1203DU	L.E.D.(ORG)	TALLY
	D2601-02	1SS81-T2	SI.DIODE	
	D2603	MA4047(M)-T2	ZENER DIODE	
△	D2701	MA4068(N)C1-T2	ZENER DIODE	
	D2702	1SS82-T2	SI.DIODE	
	D2703-04	1SS133-T2	SI.DIODE	
	D2705	1SS146-T2	SI.DIODE	
	D2706	MA4110(M)-T2	ZENER DIODE	
	D2708	1SS133-T2	SI.DIODE	
	D2709	1SS146-T2	SI.DIODE	
	D2711	1SS133-T2	SI.DIODE	

△ Symbol No.	Part No.	Part Name	Description	Local
T R A N S I S T O R				
	Q2301	2SC4632	SI. TRANSISTOR	
	Q2302-04	2SC1815(YG)-T	SI. TRANSISTOR	
	Q2402-05	2SC1815(YG)-T	SI. TRANSISTOR	
	Q2501	2SC3187-T	SI. TRANSISTOR	
△	Q2502	2SC4589-C1	SI. TRANSISTOR	H.OUT
	Q2504	2SA1309A(R)-T	SI. TRANSISTOR	
	Q2506	2SC1815(YG)-T	SI. TRANSISTOR	
	Q2510	2SA1309A(R)-T	SI. TRANSISTOR	
	Q2551-52	2SC1815(YG)-T	SI. TRANSISTOR	
	Q2554	2SC1815(Y)-T	SI. TRANSISTOR	
	Q2556	2SC1815(YG)-T	SI. TRANSISTOR	
	Q2601	2SC1959(Y)-T	SI. TRANSISTOR	
	Q2603	2SC1959(Y)-T	SI. TRANSISTOR	
	Q2701	2SC1815(YG)-T	SI. TRANSISTOR	
I C				
	IC2301	NJM4560D	I.C.(MONO-ANA)	
	IC2303	AN79L05-Y	I.C.	
	IC2401	UPC1498H	I.C.(MONO-ANA)	
	IC2403	NJM4560D	I.C.(MONO-ANA)	
	IC2404	AN7812F	I.C.(MONO-ANA)	
	IC2405	TA79012S	I.C.(MONO-ANA)	
	IC2406	TA78L012AP-Y	I.C.(MONO-ANA)	
	IC2407	AN7812F	I.C.(MONO-ANA)	
	IC2408	AN7805F	I.C.(MONO-ANA)	
	IC2501	HA11423	I.C.(MONO-ANA)	
	IC2551	TC4066BP	I.C.(DIGI-MOS)	
	IC2553	TC4538BP	I.C.(DIGI-MOS)	
	IC2554	LM2940CT-12	I.C.(MONO-ANA)	
	IC2555	AN7812F	I.C.(MONO-ANA)	
	IC2601	NJM4560D	I.C.(MONO-ANA)	
O T H E R S				
△	CP2001	ICP-N75-Y	I.C.PROTECT	
△	FR2301	QRH127J-182M	F R	1.8k Ω 1/2W J
△	FR2426	QRH127K-R22M	F R	0.22 Ω 1/2W K
△	FR2525	QRH127J-1R0M	F R	1.0 Ω 1/2W J
△	FR2702	QRH127K-R22M	F R	0.22 Ω 1/2W K
△	FR2704	QRH127J-4R7M	F R	4.7 Ω 1/2W J
	K2001	CE41923-001	CORE SLEEVE	
	S2501	QSS1F22-C09	SLIDE SWITCH	FREE RUN

CRT SOCKET PW BOARD ASS'Y (FX-3028A)

△ Symbol No.	Part No.	Part Name	Description	Local
R E S I S T O R				
R3310-15	QRG029J-103	OM R	10k Ω 2W	J
△ R3322	QRD149J-102S	C R	1k Ω 1/4W	J
△ R3323	QRD149J-102S	C R	1k Ω 1/4W	J
△ R3324	QRD149J-102S	C R	1k Ω 1/4W	J
R3507	QRG029J-822	OM R	8.2k Ω 2W	J
C A P A C I T O R				
C3321	QETC2EM-105Z	E CAP.	1 μ F 250V	M
C3501	QETC2EM-105Z	E CAP.	1 μ F 250V	M
C3503	QCZ0121-102M	C CAP.	1000 p F 3000V	P
C3505	QFP32GK-563M	PP CAP.	0.056 μ F 400V	K
C O I L				
L3301	CELP026-5R6Z	PEAKING COIL	5.6 μ H	
L3302	CELP026-4R7Z	PEAKING COIL	4.7 μ H	
L3303	CELP026-3R9Z	PEAKING COIL	3.9 μ H	
L3304	CELP026-220Z	PEAKING COIL	22 μ H	
L3305	CELP026-180Z	PEAKING COIL	18 μ H	
L3306	CELP026-220Z	PEAKING COIL	22 μ H	
L3501	CELC050-562Z	PEAKING COIL	5600 μ H	
D I O D E				
D3301-03	MA165-T2	SI.DIODE		
D3304-06	1SS244-T2	SI.DIODE		
D3307-09	1SS120-T2	SI DIODE		
D3316	MA4075(M)-T2	ZENER DIODE		
D3501-02	RGP10J(C1)-T3	SI.DIODE		
D3503-04	1SS146-T2	SI.DIODE		
T R A N S I S T O R				
Q3301-03	2SC4502-T	SI.TRANSISTOR		
Q3304-06	2SC4544-C1	SI.TRANSISTOR		
Q3307-09	2SA1321-T	SI TRANSISTOR		
Q3310-12	2SC3334-T	SI TRANSISTOR		
Q3501	2SC1505(MLK)	SI.TRANSISTOR		
O T H E R S				
△ SK3001	CE42446-001	CRT SOCKET		

FRONT CONTROL PW BOARD ASS'Y (FX-4034A)

△ Symbol No.	Part No.	Part Name	Description	Local
V A R I A B L E R E S I S T O R				
VR4101	QVGA003-CB14A	V R	10k Ω B(BRIGHT)	
VR4102	QVGA003-CB14A	V R	10k Ω B(CONTRAST)	
VR4103	QVGA003-CB14A	V R	10k Ω B(CHROMA)	
VR4104	QVGA003-CB14A	V R	10k Ω B(PHASE)	
VR4105	QVGA004-CB14A	V R	10k Ω B(VOLUME)	
C A P A C I T O R				
C4101	QEKC0JM-107MZ	E CAP.	100 μ F 6.3V	M
C4102	QCZ0207-104AZ	C CAP.	0.1 μ F 50V	Z
D I O D E				
D4101-14	MA165-T2	SI.DIODE		
D4115-19	RD5.6ES(B3)-T2	ZENER DIODE		
D4120	GL5KG8	L E D (GRN)	POWER	
D4121-23	MA165-T2	SI.DIODE		
O T H E R S				
	CM48038-001	LED HOLDER		
S4101	QSTL535-C01	PUSH SWITCH	UNDER SCAN etc	
S4102	QSTL535-C02	PUSH SWITCH	VIDEO A/B,RGB,etc	
S4103	QSP4H11-C12Z	PUSH SWITCH	MENU	
S4104	QSP4H11-C12Z	PUSH SWITCH	ENTER	
S4105	QSP4H11-C12Z	PUSH SWITCH	UP	
S4106	QSP4H11-C12Z	PUSH SWITCH	DOWN	
S4107	QSP4H11-C12Z	PUSH SWITCH	LEFT	
S4108	QSP4H11-C12Z	PUSH SWITCH	RIGHT	
S4109	QSP4H11-C12Z	PUSH SWITCH	DEGAUSS	

MICOM PW BOARD ASS'Y (FX-5018A)

△ Symbol No.	Part No.	Part Name	Description	Local
C A P A C I T O R				
C5101	QEKC1CM-476MZ	E CAP.	47 μ F 16V	M
C5102	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C5103-04	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5105-09	NCB21HK-103AY	CHIP CAP.	0.01 μ F 50V	K
C5110	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5111	NCF21HZ-104AY	CER.CAPACITOR-M	0.1 μ F 50V	Z
C5112	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5113	QEKC1CM-476MZ	E CAP.	47 μ F 16V	M
C5114	NCT03CH-330AY	CHIP CAP.	33 p F 50V	J
C5116	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5117	QEKC0JM-107MZ	E CAP.	100 μ F 6.3V	M
C5118	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5119	QEKC0JM-107MZ	E CAP.	100 μ F 6.3V	M
C5120	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5121	QEKC0JM-107MZ	E CAP.	100 μ F 6.3V	M
C5122	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5123	QEKC1CM-476MZ	E CAP.	47 μ F 16V	M
C5124	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5126	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5127	NCT03CH-7R0AY	CHIP CAP.	7.0 p F 50V	J
C5128-29	NCF21HZ-104AY	CHIP CAP.	0.1 μ F 50V	Z
C5201-03	QEKC1HM-105GMZ	E CAP.	1 μ F 50V	M
C5301	QEKC1CM-106GMZ	E CAP.	10 μ F 16V	M
C5302	QEKC1HM-224GMZ	E CAP.	0.22 μ F 50V	M
C5303	NCB21HK-223AY	CHIP CAP.	0.022 μ F 50V	K
C5304	QEKC1HM-105GMZ	E CAP.	1 μ F 50V	M
C5401-03	QEKC1HM-105GMZ	E CAP.	1 μ F 50V	M

Symbol No.	Part No.	Part Name	Description	Local
C O I L				
L5101-02	CELP008-100YL	CHIP P COIL	10 μ H	
L5103	CELP008-330YL	INDUCTOR	33 μ H	
D I O D E				
D5101-11	MA3056(L)-X	ZENER DIODE		
D5112	MA3043-X	ZENER DIODE		
D5113-14	MA151K-X	DIODE		
D5301	MA151K-X	DIODE		
D5501-04	MA3056(L)-X	ZENER DIODE		
D5701	MA3150(M)-X	ZENER DIODE		
D5702-04	MA3056(L)-X	ZENER DIODE		
D5705-06	MA3150(M)-X	ZENER DIODE		
D5707-08	MA3056(L)-X	ZENER DIODE		
D5709-11	MA3150(M)-X	ZENER DIODE		
D5712	MA8130-X	ZENER DIODE		
D5713	MA3056(L)-X	ZENER DIODE		
D5714	MA8056-X	ZENER DIODE		
D5715	MA3056(L)-X	ZENER DIODE		
D5716	MA8056-X	ZENER DIODE		
D5717	MA3150(M)-X	ZENER DIODE		
D5718	MA3056(L)-X	ZENER DIODE		
D5719	MA8130-X	ZENER DIODE		
D5720-22	MA3056(L)-X	ZENER DIODE		
D5723	MA8056-X	ZENER DIODE		
D5724	MA3150(M)-X	ZENER DIODE		
D5725	MA8130-X	ZENER DIODE		
D5726	MA3056(L)-X	ZENER DIODE		
D5727	MA8056-X	ZENER DIODE		
D5728-32	MA3056(L)-X	ZENER DIODE		
T R A N S I S T O R				
Q5101-06	2SC2712(YG)-X	CHIP TRANSISTOR		
Q5201	2SC2712(YG)-X	CHIP TRANSISTOR		
Q5202	2SA1162(YG)-X	CHIP TRANSISTOR		
Q5203	2SC2712(YG)-X	CHIP TRANSISTOR		
Q5204	2SA1162(YG)-X	CHIP TRANSISTOR		
Q5205	2SC2712(YG)-X	CHIP TRANSISTOR		
Q5206	2SA1162(YG)-X	CHIP TRANSISTOR		
Q5207-10	2SC2712(YG)-X	CHIP TRANSISTOR		
Q5301-03	2SA1162(YG)-X	CHIP TRANSISTOR		
Q5304	2SC2712(YG)-X	CHIP TRANSISTOR		
Q5401	2SC2712(YG)-X	CHIP TRANSISTOR		
I C				
IC5101	MB89647PF-140	I C		
IC5102	MB90077PF-109	I.C(MICRO-COMP)		
IC5103	ST24BM-1400	I.C.(EP-ROM)	(SERVICE)	
IC5105	GP1U781Q	IFR DETECT UNIT		
IC5106	HD74HC158FP	I.C(DIGI-OTHER)		
IC5108	HD74HC32FP	I.C.		
IC5401	UPC4558G-W	I.C(MONO-ANA)		
O T H E R S				
CF5101	CST8.00MTW	CER.RESONATOR		

INPUT PW BOARD ASS'Y (FX-6052A)

△ Symbol No.	Part No.	Part Name	Description	Local
R E S I S T O R				
R6201	QRV141F-75R0AY	MF R	75 Ω 1/4W F	
R6211	QRV141F-75R0AY	MF R	75 Ω 1/4W F	
R6231	QRV141F-75R0AY	MF R	75 Ω 1/4W F	
R6301	QRV141F-75R0AY	MF R	75 Ω 1/4W F	
R6701	QRV141F-75R0AY	MF R	75 Ω 1/4W F	
R6731	QRV141F-75R0AY	MF R	75 Ω 1/4W F	
R6761	QRV141F-75R0AY	MF R	75 Ω 1/4W F	
C A P A C I T O R				
C6201	QEKC1HM-475GMZ	E CAP.	4.7 μ F 50V M	
C6203	QEKC1CM-336MZ	E CAP.	33 μ F 16V M	
C6205	QEKC1HM-475GMZ	E CAP.	4.7 μ F 50V M	
C6207	QEKC1CM-336MZ	E CAP.	33 μ F 16V M	
C6220	QEKC1HM-475GMZ	E CAP.	4.7 μ F 50V M	
C6230-31	QFLC1HK-333MZ	M CAP.	0.033 μ F 50V K	
C6281-84	QEKC1CM-107MZ	E CAP.	100 μ F 16V M	
C6301	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V J	
C6751	QEKC1HM-475GMZ	E CAP.	4.7 μ F 50V M	
C6783-84	QFLC1HJ-104MZ	M CAP.	0.1 μ F 50V J	
C O I L				
L6701	CELP026-330Z	PEAKING COIL	33 μ H	
L6702	CELP026-680Z	PEAKING COIL	68 μ H	
L6703	CELP026-330Z	PEAKING COIL	33 μ H	
L6704	CELP026-680Z	PEAKING COIL	68 μ H	
D I O D E				
D6201-09	1SS133-T2	SI.DIODE		
D6211-12	1SS133-T2	SI.DIODE		
D6301-03	1SS133-T2	SI.DIODE		
D6701-12	1SS133-T2	SI.DIODE		
D6801-10	1SS133-T2	SI.DIODE		
T R A N S I S T O R				
Q6201-03	2SC1740S(R)-T	SI.TRANSISTOR		
Q6204	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6206	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6211	2SK301(Q)-T	F.E.T.		
Q6301	2SC1740S(R)-T	SI.TRANSISTOR		
Q6302-03	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6601-03	2SC1740S(R)-T	SI.TRANSISTOR		
Q6604-06	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6701-03	2SC1740S(R)-T	SI.TRANSISTOR		
Q6704	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6706	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6707	2SA933S(QR)-T	SI.TRANSISTOR		
Q6708-09	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6711	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6712	2SA933S(QR)-T	SI.TRANSISTOR		
Q6713-14	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6716-20	2SC1740S(QR)-T	SI.TRANSISTOR		
I C				
IC6201	LA7016	I.C(MONO-ANA)		
IC6601	TC4066BP	I.C(DIGI-MOS)		
IC6701	TC4053BP	I.C(DIGI-MOS)		
IC6801	HD74LS04P	I.C(DIGI-OTHER)		
O T H E R S				
J6201	CEMB010-004	BNC CONNECTOR	VIDEO A/B /SYNC IN	
J6202	CEMB010-004	BNC CONNECTOR	VIDEO A/B /SYNC OUT	
J6301	QMCC006-C01	DIN CONNECTOR	Y/C IN	
J6302	QMCC006-C01	DIN CONNECTOR	Y/C OUT	
J6601	CEMN070-001	PIN JACK	AUDIO A OUT/IN	
J6602	CEMN070-001	PIN JACK	AUDIO B OUT/IN	
J6603	CEMN070-001	PIN JACK	AUDIO C OUT/IN	
J6701	CEMB010-004	BNC CONNECTOR	G/Y/B/B-Y/R/R-Y IN	

△ Ref.No.	Part No.	Part Name	Description	Local
O T H E R S				
J6702	CEMB010-004	BNC CONNECTOR	G/Y/B/B-Y/R/R-Y OUT	
J6801	QMCC502-C01	DIN JACK		
S6201-03	QSS4C22-C02	SLIDE SWITCH	OPEN ← → 75 Ω	
S6701-04	QSS4C22-C02	SLIDE SWITCH	OPEN ← → 75 Ω	

POWER PW BOARD ASS'Y (FX-9038A)

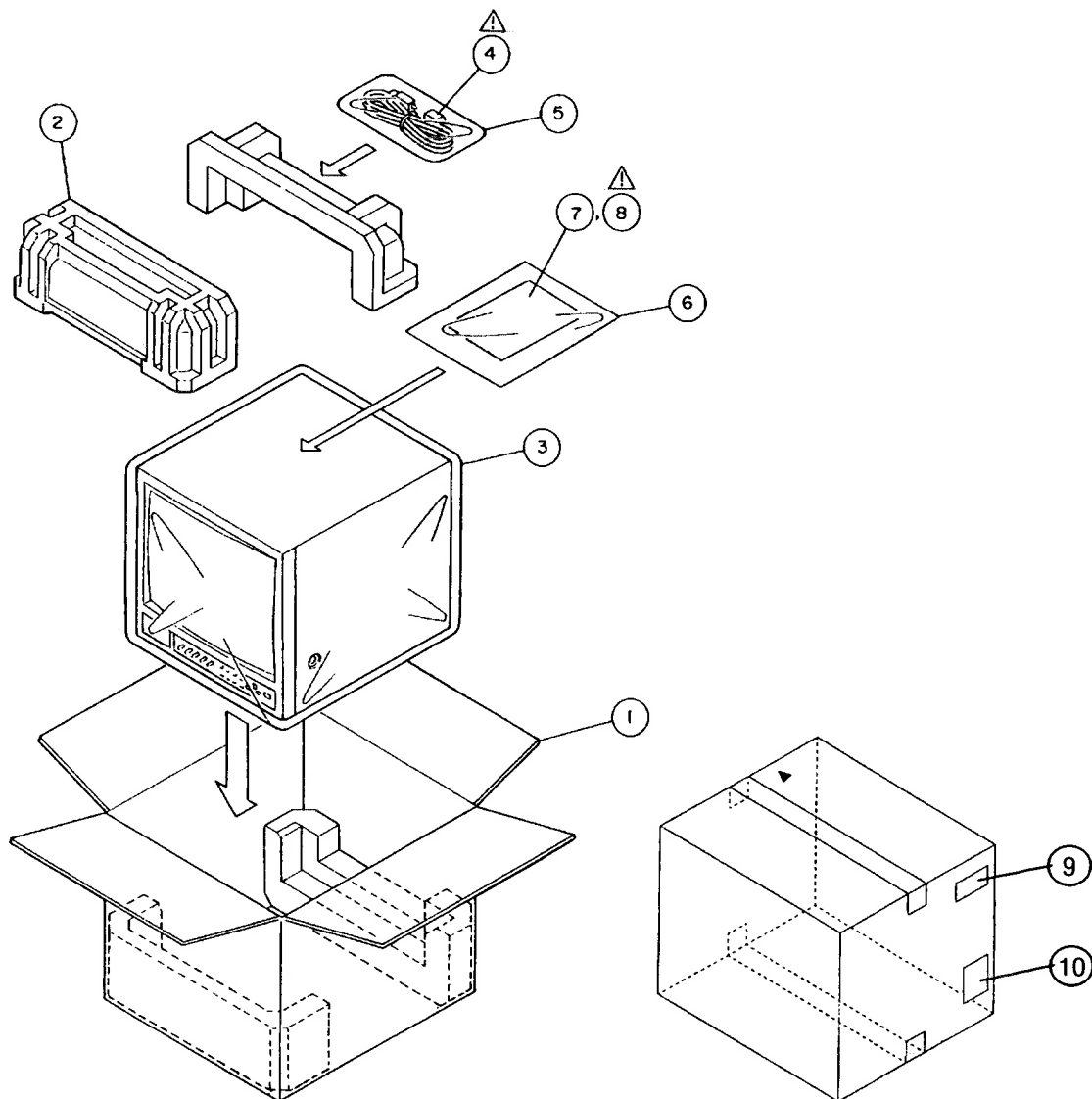
△ Symbol No.	Part No.	Part Name	Description	Local
V A R I A B L E R E S I S T O R				
R9038	QVPC611-102HZ	V R	1k Ω B(B1 ADJ.)	
R E S I S T O R				
△ R9002	QRD122J-474S	C R	470k Ω 1/2W	J
R9005-06	QRD123J-104SX	C R	100k Ω 1/2W	J
R9014	QRM059K-R22	MP R	0.22 Ω 5W	K
R9015	QRG039J-563A	OM R	56k Ω 3W	J
R9016	QRD123J-182SX	C R	1.8k Ω 1/2W	J
R9030	QRD123J-100SX	C R	10 Ω 1/2W	J
R9034	QRV141F-1502AY	MF R	15k Ω 1/4W	F
R9035	QRV141F-1002AY	MF R	10k Ω 1/4W	F
R9037	QRV141F-3901AY	MF R	3.9k Ω 1/4W	F
R9039	QRD123J-154SX	C R	150k Ω 1/2W	J
R9041	QRD123J-154SX	C R	150k Ω 1/2W	J
R9042	QRD123J-153SX	C R	15k Ω 1/2W	J
R9043	QRD123J-184SX	C R	180k Ω 1/2W	J
R9044	QRV141F-3901AY	MF R	3.9k Ω 1/4W	F
R9045	QRV141F-2701AY	MF R	2.7k Ω 1/4W	F
R9048	QRV141F-1501AY	MF R	1.5k Ω 1/4W	F
R9053	QRX029J-R39A	MF R	0.39 Ω 2W	J
R9054	QRD123J-3R3SX	C R	3.3 Ω 1/2W	J
R9060	QRF154K-4R7	UNF R	4.7 Ω 15W	K
R9061-64	QRG039J-123	OM R	12k Ω 3W	J
R9065	QRG039J-223	OM R	22k Ω 3W	J
C A P A C I T O R				
△ C9001	QCZ9033-472A	C CAP.	4700 p FAC125V	K
△ C9002	QCZ9033-472A	C CAP.	4700 p FAC125V	K
△ C9003	QFZ9035-474M	MM CAP.	0.47 μ FAC125V	M
△ C9004	QFZ9035-474M	MM CAP.	0.47 μ FAC125V	M
△ C9005	QCZ9033-472A	C CAP.	4700 p FAC125V	K
△ C9006	QCZ9033-472A	C CAP.	4700 p FAC125V	K
△ C9007	QCZ9033-332A	C CAP.	3300 p FAC125V	K
△ C9009	QCZ9033-332A	C CAP.	3300 p FAC125V	K
△ C9010	QEZ0144-477R	E CAP.	470 μ F 400V	M
C9018	QEH1HM-226MZ	E CAP.	22 μ F 50V	M
C9019	QFP31HJ-152SZ	PP CAP.	1500 p F 50V	J
C9020	QEH1HM-105MZ	E CAP.	1 μ F 50V	M
C9021	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V	J
C9022	QEH1HM-475MZ	E CAP.	4.7 μ F 50V	M
C9023	QFLC1HK-222MZ	M CAP.	2200 p F 50V	K
C9025	QEH1EM-107MZ	E CAP.	100 μ F 25V	M
C9026	QFLC1HK-473MZ	M CAP.	0.047 μ F 50V	K
C9027	QEN61HM-105Z	BP E CAP.	1 μ F 50V	M
C9029	QFLC1HK-333MZ	M CAP.	0.033 μ F 50V	K
C9036	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V	J
C9038	QEH1EM-338M	E CAP.	3300 μ F 25V	M
C9039	QEH1EM-228M	E CAP.	2200 μ F 25V	M
C9046	QEH2CM-227M	E CAP.	220 μ F 160V	M
C9049-51	CEX41161-001	E CAP.	470 M F 100V	M
C9517	QETB2AM-477	E CAP.	470 μ F 100V	M

△ Ref.No.	Part No.	Part Name	Description	Local
T R A N S F O R M E R				
△ T9001	CETS003-001	SWITCH.TRANSF.		
△ T9002	CE41856-00A	PULSE TRANSF.		
C O I L				
L9901	CELP006-4R7Z	PEAKING COIL	4.7 μH	
L9902	CJ30030-100	HEATER CHOKE		
D I O D E				
△ D9001	S4VB60-L15	BRIDGE DIODE		
D9005	RG2A-LFC4	SI.DIODE		
D9006	FML-G12S	SI.DIODE		
D9009	1SS133-T2	SI.DIODE		
D9010	RL4Z-C1	SI.DIODE		
D9012	EG1Z-T3	SI.DIODE		
D9013-14	1SS133-T2	SI.DIODE		
D9016-17	1SS133-T2	SI.DIODE		
D9018-19	RG4C-C1	SI.DIODE		
D9020	1SS133-T2	SI.DIODE		
D9021-22	MA4068(N)C1-T2	ZENER DIODE		
D9023	MA4110(M)-T2	ZENER DIODE		
D9024	RD5.6ES(B2)-T2	ZENER DIODE		
D9026	RD18ES(B3)-T2	ZENER DIODE		
D9027	MA4300(M)-T2	ZENER DIODE		
D9028	1SS81-T5	SI.DIODE		
D9032	1SS81-T5	SI.DIODE		
D9033	RD4.3E(B2)-T2	ZENER DIODE		
T R A N S I S T O R				
Q9001-02	2SC1959(Y)-T	SI.TRANSISTOR		
Q9003	2SA562TM(Y)-T	SI.TRANSISTOR		
△ Q9004	2SK1118	F.E.T.		
Q9005	2SD1409	SI.TRANSISTOR		
Q9006	2SC1959(Y)-T	SI.TRANSISTOR		
Q9008	2SA1370(E)	SI.TRANSISTOR		
Q9012	2SC1472K(AB)-T	SI TRANSISTOR		
I C				
△ IC9001	FA5301BP	I C		
O T H E R S				
△ F9001	QMF51E2-4R0S	FUSE	4.0A	
△ FR9901	QRH127K-R22M	F R	0.22 Ω 1/2W	K
△ FR9902	QRH127K-R22M	F R	0.22 Ω 1/2W	K
△ FR9903	QRH127K-R22M	F R	0.22 Ω 1/2W	K
K9902-03	CE41923-001	CORE SLEEVE		
K9905	CE42050-001Z	CORE		
△ LF9001	CE41775-003	LINE FILTER		
△ LF9002	CE41775-003	LINE FILTER		
△ PC9001	CNY17F-C1	I.C(PH.COUPLER)		
△ RY9002	CESK026-001	RELAY		
△ SW01	QSP4D21-C06	PUSH SWITCH	POWER	
△ TH9001	CEKP009-001	P.THERMISTOR		
△ VA9001	ERZ-C10VK621G	VARISTOR		

V.SAW MODULE PW BOARD ASS'Y (FX-M004A)

△ Ref.No.	Part No.	Part Name	Description	Local
O T H E R S				
	FX-M004A	V.SAW MODULE PW		

PACKING



PACKING PARTS LIST

Ref.No.	Part No.	Part Name	Description	Local
1	CP11224-A35	PACKING CASE		
2	CP11312-C0A	CUSHION ASSY	4pcs in 1set	
3	CP30974-004	POLY BAG		
△ 4	QMP4908-200K	POWER CORD		
5	QPGA012-03005	POLY BAG		
6	CP30975-001	POLY BAG		
7	CM23063-001	X-RAY CARD		
△ 8	CQ40026-004	INST.BOOK		
9	CM47385-00A	POS/SERIAL LABEL		
10	CP40344-001	SDI LABEL		

JVC

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